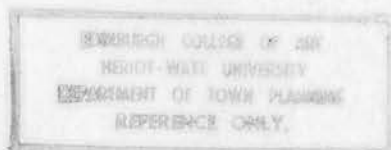


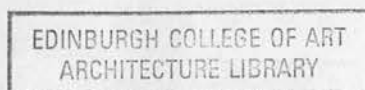
**The Impact of the Socio-Cultural
Aspects on the Built Environment
With Special Reference to the Sudan**



A Thesis submitted for the
Degree of Ph.D. in Architecture

By

Ali M. M. Madibo



Heriot-Watt University
Department of Architecture

Edinburgh

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CALIFATE'S HOUSE DOOR -- UMDORHMAN -- (1885 -- 1889)

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Heriot-Watt University:

POSTGRADUATE EXAMINATIONS

1. NAME

(a) Surname MADIBO
(b) Other Names Ali M.M.

Registration No:
794197744

2. QUALIFICATION SOUGHT

(PhD/MSc/MLitt/MArch) PhD

3. TITLE OF THESIS

The Impact of the Socio-Cultural Aspects on the Built
Environment, With Special Reference to the Sudan.

Date 19/6/1989 Signature _____

Abstract

The physical and spatial variations in response to cultural differences have generally been ignored in the contemporary theories and design of architecture worldwide. It is apparent that the design of the physical environment has departed from its context, and becomes a source of initial problems and disasters.

This situation is well manifested in third world countries, where modern technological and economical co-operation, on top of the past colonialism, have escalated the process of architectural westernization.

Thus this study is intended to correct the existing situation in the Sudan by turning to the rich Sudanese culture, and understand the Sudanese subtle daily life, needs and expectations through a proper understanding of the Sudanese cultural institutions. The study utilizes three interrelated methods (questionnaire, observational and cultural analysis), to uncover the hidden aspects of the Sudanese culture. The data collected in the survey from a sample of respondents is analysed, in order to understand the Sudanese attitudes towards the existing built environment and to identify their expectations in an ideal built environment that can satisfy their socio-cultural needs.

The findings show a general dissatisfaction with the existing residential settings mainly from a planning pattern point of view. Furthermore, the result uncovers the wide gap between the westernized built environment and the indigenous Sudanese one. Finally, the findings show explicitly that designers have to pay attention to variations between distinctive cultures as well as to subcultural variations.

PREFACE

Very little formal research in this area in the Sudan context has been conducted in the past. This study must therefore remain essentially exploratory and some of the author's interpretations, explanations and conclusions will no doubt have to be elaborated in the future. Because no work on such a vast subject can be final, and this one does not, in fact, represent a generally accepted or shared body of thought. It is intended that this study will prove useful to architects, urban designers and planners concerned with the built environment, particularly in developing countries, in achieving better and satisfactory built environments.

The study is concerned with a subject which overlaps many disciplines - architecture, cultural anthropology, history, city planning, and even the behavioural sciences. It is therefore necessarily cross-disciplinary and must call on the work of many observers in diverse fields and reflect many intellectual debts. The area the author is concerned with is comparatively new, not only because his stress is on the built environment and its creation, but also because, in many of the fields mentioned, the topic of residential environments and settlements, while relevant, has been either neglected or treated as secondary. When references to dwellings and settlements occur in the anthropological literature, for example, they are descriptive rather than analytical.

In attempting to deal with the broader respects of the built environment form, this work is addressed to all those concerned with the habitat of man.

The thesis is divided into four parts and fifteen chapters. The first part is about the background to the study and includes the need for such a study in general and a statement of the problem in the Sudanese context. It also it gives a short description about the historical and climatic factors of the Sudan.

It goes on to present a historical and physical account of the four study areas, Khartoum, Umdorman, Khartoum North and Tuti, and states the research opportunities which can be pursued in Greater Khartoum. This first part indicates the importance of the study to both an academic audience and the general reader. Also it discusses the existing planning policies and approaches taken in the last hundred years.

The first part also concentrates on survey of the Sudanese cultural institutions which are relevant directly or indirectly to the built environment. This includes the main cultural institutions (formal), such as the family, and the very subtle aspects of Sudanese daily life (informal), i.e., the way people interact with each other.

The second part discusses the research approach. This includes three areas: the first deals with the critique to the existing planning policies and approaches; the second states the research issues and the assumptions on which the study has been based; the third deals with the methodology of the study. This in turn divides into three sections. First; the behavioural analysis based on the studies of Jan Gehl of the Royal Academy, Copenhagen. The second explains the structure and the format of the questionnaire used and the way the interviews were conducted. The third concentrates on the concept of the cultural analysis. It explains broadly the map of culture borrowed from E. T. Hall and its application to the research. The limitations have been clearly set forth in this part stating how far the research effort has been extended, what limits were set within areas relevant to the problem and did the research effort intrude?

Part Three deals with the body of the data gathered from questionnaire's, interviews and the observation technique, in terms of the general findings from the factor analysis, the questionnaire and the implications from culture.

Second the data are codified, arranged and separated into segments, each corresponding to a particular section of the problem which has been studied, thus considered in separate chapters (chapters 6 - 13). In each case an argument has been developed, based on a sub-problem that needs resolution and the corresponding data in form of tables, graphs, charts and histograms, as well as the interpretation of the data.

Finally, in the closing sections a clear statement is given as to whether the data did or did not support the research issue being tested, so testing the central assumption (hypothesis) of the study. The last section of part three (chapter 14), summarises and discusses the findings of the previous chapters and their implications on the research issues.

The fourth part (chapter 15), presents the conclusions and the recommendations of the study.

Biographical Note About the Author

The author graduated from Khartoum University – Architecture in 1975, since then he joined the Ministry of Public Works and Housing. He has received invaluable experience through his work in the public sector, and his contact with professionals. He broadened his knowledge through working in private firms, then later on in a design office partnership. Through this partnership he contributed in many local design competitions and won some of them. He contributed in many local and international conferences, such as an International Housing Conference in Harare, Zimbabwe in 1986 sponsored by the United Nations.

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Part (1)

Part (1)

CHAPTER 1

INTRODUCTION

1.1. The Need for Study (General)

The whole world is increasingly interlocked in a single global civilisation. Almost everywhere is now enmeshed in an all-encompassing system of trade and finance, technology, tourism and telecommunications, and a similar common belief about the value of science. Even tourism, rapid transport and other ubiquities such as canned entertainment, advertising and frozen and fast foods all have a similar tendency to blur differences and flatten our experience. Worse, the most visible evidence of this universal civilization is that everywhere is found the same commercial trash of curtain-wall office blocks, tacky apartment houses, hamburger chains and even trashier entertainments. So, despite its many obvious benefits this civilisation also has a powerful tendency to homogeneity and mediocrity; this is reflected particularly in the built environment.¹

But in spite of these universalising modern effects, there is often a thriving variety of local culture. By concentration on specifics of the locality, these cultures are the repository of history, custom, myth and legend. In architecture this leads to both regional differentiation and a suffusion of building form with symbolic content.

Since the inception of the "International Style" in architecture there has been a steady erosion of cultural differences between buildings. In the past thirty years, this has been accelerated by the growth of international communications. For example it is now possible, for a Japanese designer to produce the same type of building for New York that he produced for Teheran.

¹ Peter Buchanan, *Architectural Review*, May 1983

Today, most buildings are designed with little reference to the culture in which they are to exist. Yet there is at present little information on the socio-cultural losses or gains which accrue from this practice.

The assumptions underlying this "Accultural" approach would suggest that further research could be of value. These assumptions include the belief that most life styles can adapt to the Western paradigm on which most buildings are premised and that the perception and understanding of the forms of buildings will be similar across cultures. When even relatively small subcultural differences between designers and users are thought of as possibly causing dissatisfaction, it is clearer that the implications of cultural differences are in need of examination.

In the last 10 – 12 years there have been two principle new developments in design. One is design methodology, the other man environment studies. Both were developed as a response to a set of felt needs having to do with dissatisfaction with the way design was being done and with its relative ineffectiveness. Whereas design methodology concentrated on the way information was structured and how design processed it, man-environment studies approached the question of what kind of information should be used in design. The basic premise which was associated with this field, was that since design is for people, then to design properly, one needed to know about human behaviour in the broadest sense. Thus, almost by definition, the field is interdisciplinary. It exists at the point of intersection or overlap of a number of fields. At the same time it also tends to be very research oriented – in designing for people, its approach is to endeavour to discover how people behave, their desires, needs and preferences rather than guessing or making arbitrary assumptions.

Clearly a field as large and complex as this cannot be summarised in a few

pages, but, it can be argued that any specific question about man-environment interaction can be seen as falling into one of three general questions "or, more usually a combination of these":

1. What characteristics of people, as members of a society are important in understanding environments and in designing them?
2. What are the effects of the physical environment on people and how important are these effects?
3. Given that there is a mutual interaction of people and environments, what are the principle mechanisms linking them?

The second question, dealing with the effects of environments on people, is central and critical for designers: if there are no effects, or they are minor, then major efforts in design are unnecessary; if however, the effects are major and significant, then a strong rationale exists for improving design effectiveness. Unfortunately this question is also a very difficult one. One difficulty is that it is often stated wrongly, almost as though people were placed in environments which then act on them. In fact, in most cases, people select environments by matching the perceived qualities of those against images which are both culturally and personally variable. Blocked habitat selection is often a major environmental problem.² This is typical of the Sudanese situation, where in most cases people have no real habitat selection for socio-economic reasons.

A distinction needs to be made between (direct) and (indirect) effects of environments on people. The former are those where the settings in which

²Rapoport 1977

people find themselves exert direct effects on them and their mood. The latter are those where environments communicate certain meanings and cues which are used to define the social situation and it is the latter which influences behaviour. In this connection, then, the environment can be seen as a form of non-verbal communication providing cues for behaviour.³ This study is dealing mainly with the former effect, (direct), since it deals with the overall built environment and not individual behaviour settings, such as Mosques, magistrate courts etc.

Nowadays, technological and economic development, and its concomitant social changes, are manifested through out third world countries, and Sudan is not an exception of that.⁴ The question of whether economic development depends primarily on social institutional change in such societies or on the need for a fundamental restructuring of the international economy to eliminate basic inequalities⁵ is too large an issue to be entered into here. It can nonetheless be argued that whatever the prime mover of economic development, social and cultural change occurs and this involves changes in institutions and values.

The way in which these changes take place, at what rate or whether they take place at all are processes about which little is known. Whatever else can be said, the probability of change in values and institutions is closely related to the degree of social interaction, information exchange and communication, and this in turn is affected by the physical-spatial structure of the city and the mean of communication within it.

This is not to say that 'spatial structure' is, on its own, it is a major

³Rapoport 1977;1978 (c)

⁴ee, 1968

⁵Brookfield, 1975

development of the social relations or social structure as some of the early urban ecologists would imply. Yet it is also true that 'a social behaviour occurs in spaces'.⁶ Though sociology is primarily concerned with the study of social relationships research in urban sociology has too often assumed that such relationships occur in a physical-spatial vacuum.⁷ It is clear from recent studies on man-environment relations that socially and culturally learnt perceptions of physical environments both influence behaviour and also influence the environment.⁸ It is in this context therefore, that physical-spatial variables in the city and the perceptions of them are assumed to have importance for social behaviour.

Apart from the influence of such objective factors as perception on social behaviour, in cities where electronic and automative means of communication such as telephones, television, automobiles and forms of public transport, are relatively few, it can also be assumed that spatial configurations of the inhabitants affect the degree of interaction, and through this, the maintenance or avoidance of social relationships.

The successful functioning of any man-environment system depends not only on a technologically modified environment but also, on a learnt code of behaviour. Such behaviour consists of a set of institutionalised norms, either internalised within a particular culture, or enforced by a system of sanctions, as the case of Cantonment in India, where a culture-specific environment is situated in an alien cultural setting.

Thus human settlements become no longer satisfactory for their inhabitants.

⁶Filkin and Weir, 1972, p.107

⁷Harvey, 1973, p.24

⁸Rapoport, 1971,1976; Craik, 1973

This is true everywhere in the world, in underdeveloped as well as developed countries. It holds true for both the lifestyles of their inhabitants, and for the forms we give to the shells of the settlements trying to satisfy their needs.

The settlement problems are not described in relative terms that can take account of available socio-cultural norms, as that only encourage despair. From the social point of view man appears to be lost in the big cities, and feels abandoned by progress in many small towns and villages. But it should also be mentioned that some areas exist in which conditions comparatively appear satisfactory.

Man is becoming a displaced person within his own settlement. Due to lack of social cohesion within his group there is reason to believe he is becoming more alienated and neurotic. Due to a lack of contact with the physical shell of the settlement, man gradually feels himself to be a displaced person; the car has displaced him from his own public space, his square, his streets. He no longer participates in the life outdoors, the public life of the settlement.

Similarly Christopher Alexander⁹ stated that,

"The task of city planning is in short, the design of culture, which is a system of standard situations. Each of these situations specifies certain rules, certain allowed limits of behaviour for the persons in these rules, and the requisite spatial settings for this behaviour. Each situation thus specifies a certain physical pattern and each pattern recurs many thousands of times in a specific city. The form of the city is generated by the combination of these patterns. In this sense, the city, viewed as a purely physical system, is a direct concrete manifestation of the culture. Any attempt to change the physical organisation is an indirect attempt to change the culture".

⁹ Christopher Alexander 1977

This point has again been emphasised by Rapoport,¹⁰ who stated that:

"The values and rule system of different groups help understanding the urban forms, which their choices produce. Values, thus affect the definition of problems, the data used and the solution proposed".

In the same context, E.T. Hall¹¹ suggests that societies not only differ in their definition of such terms as privacy and density, but also in the way they respond to them.

The different forms taken by dwellings are a complex phenomenon for which no single explanation will suffice. All possible explanations, however, are variations on a single theme:- People with very different attitudes and ideals respond to varied physical environments. These responses vary from place to place because of changes and differences in the interplay of social, cultural, ritual, economic, and physical factors. These factors and responses may also change gradually in the same place with the passage of time; however, lack of rapid change and persistence of form are characteristic of primitive and vernacular dwellings.¹²

This is a typical case for the existing Sudanese built environment. The Sudanese indigenous form without any doubt has catered for the main environmental factors mentioned above. However, the influence of the colonisation era together with the interaction with other cultures has been taken into account.

¹⁰Rapoport, Amos, 1967

¹¹Hall, E.T., 1973

¹²Amos Rapoport, 1969, House Form and Culture, Prentice Hall International, Inc., pp.46

All the examples given illustrate the need for developing countries to establish specific concepts and terminologies for the formulation of solutions and standards relative to their own social, cultural, climatic and economic conditions.

So the task of new environmental design should not be created by planners or designers own skill and image. It should combine the designer's own creative capability and knowledge of what people will need; their dominant and independent values, (i.e., inherent cultural and ethical values of a given society), in addition to knowing how people tend to use physical elements. If the designer's knowledge of the cultural values and norms of a specific group or community is small, he can not predict aspects of behaviour by the community which will take place within a project after completion. This is the main reason why some designed environments produce completely different human behaviour to that originally intended in the design.

1.2. Statement of Problem (General)

Although the problem of congruency between built environments and local cultures is universal, nowhere is this proposition more apparent than in the 'colonial cities' of the nineteenth and twentieth centuries, whether in Africa, Asia or Middle America, where the urban form of a dominant, industrialising Western power were introduced to largely 'pre-industrial' societies. From Rangoon to Cairo, Luanda to Singapore, cities were laid out by the rulers not the ruled. Here, juxtaposed in the environment of the colonised society, were the urban forms of East and West; a unique type of social, physical and spatial organisation emerged.

Political independence for many, if not all, of these societies has brought change in their urban forms. In the Sudan some inherited cities or parts of

cities are currently being de-colonised by the indigenous elites after the introduction of some physical alterations. However, the problem persists and becomes more apparent through the importation of foreign designs and expertise without conducting proper socio-cultural studies, and without introducing building by-laws to match the society's needs and expectations.

Since the decision about the forms of space organisation to be used (which are assumed to be the essence of architectural and urban design) have been arbitrary, the current problem will continue without proper solution. This is the case in the Sudanese culture, suggesting that attempts to impose designer's values and standards on the public have not worked because these values represent different sub-cultures.¹³ This problem is always more severe when designing for other cultures, as in the case of the Sudan. Nonetheless designers generally seem unaware of this problem and assume implicitly that the users should learn the designer's code rather than vice versa.

The variables which need to be considered in making design decisions are very numerous, and include perceptual, symbolic, social, territorial, implementational and physical criteria as well as those which could be classified broadly as cultural. The author will concentrate solely on the cultural variables.

The current design situation has created numerous problems and is likely to create more. However, at this stage problems will be stated in general terms. Later, when the study advances by the means of computer analysis, they will be more specific.

¹³ Rapoport, the Ecology of Housing, Ecologist, Vol.3, No.1 Jan. 1973

1.2.1. The Main Problem

Environmental changes can cause serious changes in behaviour. Social change to Western forms in emerging countries such as the Sudan is neither inevitable nor desirable. One assumes that the rich Sudanese culture, value system and life style will survive under environmental change but with great effort.

There are many general implications or problems inherent in design intervention:

1. If the present trend of design importation continues, how do the Sudanese people adapt themselves to such foreign environment to guarantee their cultural survival?
2. How do different urban patterns generate different behaviour within the Sudanese culture?
3. How do socio-economic factors influence the built environment and behaviour?
4. If the imported environment has any social implications on the Sudanese people, are there any contradictions between such new social trends and those prescribed culturally?
5. How does different regional backgrounds influence perception of the urban environment in Khartoum?
6. Are residents satisfied with their existing environments and why?
7. What is the impact of urban crowdedness on residents?
8. What are the roles of the Sudanese by gender and

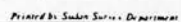
age-groups in this environment?

These are the general questions which the research methods of the thesis address.

It is important to note that this thesis is not suggesting that the imported western designs are useless. On the contrary, they mainly rest on health, climatic (artificial), economic and technological criteria, but this too becomes limited and in many cases, absolute housing and planning standards are extremely questionable. However, beyond these factors, there is a need to see housing in the broadest context which includes the traditional social organisation, family structure, symbolic values, and cultural definitions of environmental quality.

Since the entire man-made environment is the unique product of a particular society and culture, only with a thorough understanding of a society's values, beliefs, cultural institutions and social organisations, is its built environment properly understood.

It is the aim of this study to examine whether culture influences the built environment in the Sudanese context. This will be arrived at through supporting data on different research issues and how it might resolve the sub-problems, and thus the main problem. The main problem, sub-problems and the research issues are all strongly linked to the principle aim of the study mentioned above.



CHAPTER 2

BACKGROUND

2.1. General

2.1.1. Historical Background

One of the least discussed yet probably the most difficult of the many problems facing post-colonial Africa is that almost everywhere in the continent the modern nation-state was created before the nation was properly formed. Most newly independent countries, therefore, have been faced with the immediate task of trying to create viable, national societies out of often disparate tribal, ethnic and regional forces.

The Sudan is a classic example of a divided nation. It is divided by geographic, religion, by ethnic kinship, by region and history. Like most African countries, the modern Sudan was created artificially by a colonial power. But though ruled for almost a century by a single power as a single country, its two main societies were deliberately encouraged to grow apart. The North developing its largely Islamic traditions and Arabic culture; the south emerging as a christian-based, English speaking region. The result of this policy was to consolidate and intensify factors making for divisiveness. The great gulf of language, religion and separate administrative units was easily maintained because of the great distances separating the important centres of the north from the peasant societies of the south, and by poorly developed communications – transport, press and radio.¹

The Sudan is Africa in miniature. It is huge, with infinite variations from sandy desert to sub-tropical forest. It is inhabited by people of different origins,

¹Abbas, Mekki, (1951).

different way of life, different religions, different tongues. Though sparsely populated, only 22 million the Sudan has an area of nearly one million square miles which makes it the tenth largest country in the world.² It is made up of the seven regions; Northern, Khartoum, Mid-region, Eastern, Kordofan and Darfur (with a total area of 700,000 square miles) together with the Southern region. The country varies from the Libyan and Nubian deserts in the north to the swamps of the Upper Nile in the south, from the mountains of the Imatong on the Kenyan border to the Great Nile – Congo Divide, from Chad and the central African Republic on the West, to Eritrea and the Red Sea Hill on the East.³

North of Khartoum the Sudan is part of the North African desert through which the River Nile forces its way northwards to Egypt. The White Nile flows from beyond Lake Victoria through Kioga and Albert Nyanza and traverses the Sudan from Nimule to Wadi Halfa for about 2,500 miles. In its journey northwards it is enriched and intensified by the floods of the *Sobat*, the Blue Nile and the Atbara rivers in turn. These flow from the mountains of Ethiopia from which comes more than 80 per cent of the Nile charge.

As early as 2800 B.C. the Northern part of the Sudan was conquered by the Egyptians of the Old Kingdom. The power, interest and influence of the rulers of Egypt determined the religious and cultural life as well as the administration of a large part of the territory. When the Egyptian rule of the Sudan weakened the country was ruled by a number of independent kingdoms and tribal chiefs. It was unified for the first time, with its present boundaries, when Mohammed Ali, the Pasha of Egypt, (*Ottoman Empire*) conquered the country in 1822 and

²Said, B.M., 1965.

³See Map (1)

established a Turko-Egyptian rule employing European administrators and explorers. This rule continued until 1881 when Mohammed Ahmed El Mahadi successfully revolted against the government and overthrew the regime. The Sudan remained independent until 1889 when it was reconquered by a joint Anglo-Egyptian campaign under the leadership of Lord Kitchener of Khartoum. An Anglo-Egyptian convention signed in 1889 brought the Sudan under the joint administration of the two countries. The Sudan became self-governing in 1954 and independent in 1956.

From 1954 to 1956 the Sudan was administered by a transitional Sudanese government under the Anglo-Egyptian Sudan Agreement, the main purpose of which was to liquidate the condominium and to create the neutral and free atmosphere necessary for self-determination. The Sudan had no need to resort to the exercise of self-determination since all its people in 1955 were united on the platform of independence. It was proclaimed an Independent Republic by the first Sudanese Parliament at the beginning of January 1956.⁴

The problems of over-population, feudal aristocracy and shortage of land that face many of underdeveloped countries are not known in the Sudan. The government has pursued a policy of rapid Sudanisation, and since Independence, the top ranks of the civil service have proved to be of a reasonably high standard, capable of administering the country effectively, and realistic in their approach to its problems.

The Sudan's economy is based almost entirely on agriculture. About 80 per cent of the labour force is engaged in farming and the breeding of livestock. These activities contain 59 per cent of the gross domestic product, while

⁴Said, B.M., 1965.

industry and mining provide employment for only one tenth.

In the Sudan the Government owns and operates all the public utilities, including the railway and the river steamers. The government is also a partner in the production of over half of the cotton produced in the country and markets 75 per cent of the crop.

2.1.2. Climate

Introduction

Environmental design solutions and standards are relative. They reflect the values that people hold and the opportunities available for them to achieve these values. As both values and opportunities vary from nation to nation one can only expect to find different solutions and standards; different in both their concepts and magnitudes. Rapoport summarised this view in one of his articles as follows:

“(As people perceive problems, possible solutions and ideal environments in different ways, they define basic needs differently; consequently they define different standards (temperature; sound, space; etc), concepts (density; privacy; etc) or domains (urban neighbourhoods; personal space, etc). This leads to major design differences – different views of reality lead to different mental schemata and then to different action and solution).”

At least in the field of housing and settlements, these relationships were not always observed. One can find many situations where the attempt to solve settlement problems – particularly those of developing nations – have been substantially influenced by concepts derived from other societies. Reasons for this are not difficult to find in a time when the standards of living and way of life in one society are communicated through various media to the average man in another. The result, however, was in many cases that the “problems”, the “solution”, and the ideal “environments” have been perceived by both urban

designer and the people.

Although the main concern of this study is to examine the impact of the Sudanese socio-cultural aspects of the built environment, it is important that a brief account of the climate and its impact on the Sudanese built environment is given.

Climate and the Need for Shelter

Climatical determinism has been widely accepted in architecture as well as cultural geography. One need not deny the importance of climate to question its determining role in the creation of built form.

It could be argued that the manner in which the settlement is used will depend on the climate, and it is obvious that the climate will play a role – but as usual this is not the whole story. Examination of the extreme difference in urban pattern and house types within one area, such as the case of Umdorman and Khartoum, and old and new Delhi, or certain Latin American cities, shows them to be much more related to culture than to climate, and makes any extreme determinist view rather doubtful.

In architecture the climatic determinist view, still rather commonly held, states that primitive man is concerned primarily with shelter, and consequently the imperatives of climate determine form. With more specific regard to the house, it has been stated that:- (shelter is of supreme importance to man). It is the prime factor in his constant struggle for survival. In his efforts to shelter himself against the extremes of weather and climate he has over ages involved many types of dwellings one of which is the courtyard.

The existence of fairly frequent anti-climatic solutions leads one to question the more extreme climatic determinist views and suggests that other forces must be at work. Primitive and peasant builders have needs and lives which

are (irrational) in terms of climate. These may include ceremonial and religious beliefs, prestige, status and so on.

Why some natives of North Africa insist on living in European style dwellings, while courtyard house would be much more comfortable, raises questions of status and modernity. One reason why westerners have been unable to use such court dwellings is the scale and arrangement of spaces, which are culturally unsuitable. Natives on the other hand have had to brick up openings in European houses, not only to avoid light and sun but also for privacy. Another anomaly in the current study shows that houses are built along the western design line, with imported materials and furniture which are hardly utilised.

Climate as a Modifying Factor

Climate is an important aspect of the form-generating forces and has major effects on the forms man may wish to create for himself. This is to be expected under conditions of weak technology and limited environmental control systems where man can not dominate nature but must adapt to it. The impact of the climatic factor will depend on its severity and forcefulness, hence the degree of freedom it allows. Its extreme example is the hot arid example of the Northern Sudan.

Man was faced with the problem of designing for climate as soon as he left those areas where no shelter from climate was needed. In these terms, the house is a container whose main purpose is to shelter and protect its occupants and contents from animal and human enemies and natural forces known as the elements. It is a tool which frees man for other activities by holding what suits him, yet it protects him from the undesirable effects of his surroundings.

The need for shelter varies with the severity of the forces to be overcome, and the climatic scale is a useful concept for determining the need. This scale, if drawn, would range from need for no shelter at all, on climatic grounds alone, to areas with a maximum need for shelter. The solutions in each case will provide the maximum amount of protection in terms of the given technological resources and the socially defined needs. The more severe the climatic constraints, the more will the form be limited and fixed, and less variation will be possible from what one could term (pure climatic functionalism); hence, less choice will be possible. However, the criticality never limits choice entirely. Although the cold winters in mountain areas means that people and animals must spend almost all their time indoors, people in the hot arid climate in plain areas such as in the Sudan enjoy their winter time out-of-doors. The specific form of the shelter is still open to considerable choice.

Weather Element

General

This part deals with the impact of weather elements on the built environment for a hot dry climate. Special reference is given to the Sudan (Khartoum area).

Dry climates are the most extensive over the earth's land surface, covering 26% of continental areas.⁵ They prevail over North Africa, the Arabian peninsula, West and Central Australia, and the Western coast of Central and South America.

The essential feature of a dry climate according to Thornthwaite⁶⁷ is that

⁵Trewartha, G.T., "An Introduction to Climate". McGraw-Hill, New York, 1954.

⁶Thornthwaite, C.W., "The Climate of Earth". Geog. Review, July 1933.

⁷Thornthwaite, C.W., "An approach toward a rational classification of climate", Geog. Review, Jan., 1984

potential evaporation of moisture from soil surfaces and vegetation exceeds the average annual precipitation; so that in a normal year there is a prevailing water deficiency.

Such climates are characterised by clear skies and a low water vapour content in the atmosphere. Since water vapour is a principal absorber of solar energy, and since it acts as a blanket to prevent excessive cooling of the earth's surface by virtue of its opaqueness to energy radiated from the earth, a low atmospheric content of water vapour results in large diurnal fluctuations in temperature due to excessive heating of the earth's surface by day and excessive energy losses to the atmosphere by night. Lengthy sunshine hours and high intensities of solar radiation are usual under such a climate.

Wind

Wind is also related to temperature and wind speed, humidity and temperature all enter into the concept of effective temperature which is used to measure comfort. The need for comfort leads either to encouraging or discouraging wind. When it is cold, or very dry, wind generally becomes undesirable; when it is hot and humid, wind is essential.

Rain

The main effects of rain are on the construction of houses, etc. In arid areas catching rain and protecting it from evaporation may be important, as in some Carribbean Islands, where cisterns under the house are used and in central Sudan, where the trunk of some types of trees are used for the same function.

Radiation and Light

Radiation and light are generally undesirable in hot areas and various devices are used to avoid them.

In hot dry areas direct radiation of the sun is avoided in various ways. This is another example of choice since, once the need for excluding excess light has been decided upon, and the definition of excess is variable, there are many different solutions possible and each culture handles the problem in its own way. The same goal can be achieved by having few and small openings, as in North Africa; by having sizeable windows with dark shutters, as in Spain and Italy; by the wide overhangs, lack of walls, and dark materials of the Yagua dwellings; or by the wide verandahs of Louisiana or Australia (now replaced by picture windows). Verandahs and overhangs can be designed to allow the low winter sun to enter while excluding the higher summer sun, as has been traditional in Japan, Aden, Zanzibar and ancient Greece.

Another important component in hot, dry areas is ground radiation, which can be a major source of glare and heat where there is no vegetative ground cover. Openings tend to be placed high to avoid this, or shaded arcades are used around the house, and attempts are made to use vegetations and water around the house, although this is often difficult. In some areas deciduous trees are planted; so when they lose their leaves in winter they admit the sun which is excluded by the foliage in the summer. They also cool the immediate setting of the house through transpiration, evaporation, shading, and reflections. Externally in such area we find the use of geometric forms which stand out in the sun without glaring reflections. Attempts are sometimes made to shade an entire settlement, as in the Southern Californian examples, and whole streets and markets are shaded in Spain, Japan, Arab countries, and North Africa. Shadows generally attract people in these areas, and settlements were traditionally designed with this in mind.

The decision as to what form the house shall take is made on socio-cultural grounds - way of life, shared group values, and ideal environment sought. Above all it has to be decided whether the dwelling is to be individual or

communal, permanent or portable, the whole setting for life or part of the larger realm of the settlement. Also, an adaptation to site has to be made and the form has to respond to climatic forces and universal problems relating to construction and appropriate technology have to be met.

The Sudan

The Sudan is, broadly speaking, a vast plain lying in the tropics, between latitude 4° N and 22° N. Apart from the "Sud" swamps in the south. There are no inland lakes or water surfaces large enough to produce local climatic conditions.

Satakopan,⁸ using a system of classification, divided Sudan into four climatic zones.

1. The arid zone = areas to the east of longitude 24° and north of latitude 12° n. In this zone, areas south of latitude 14° n. (and the Red Sea Hills) have relatively higher moisture indices and are, therefore, comparatively less arid.
2. The semi-arid zone = comprising Western Darfur, the plains in Bahr El Gazal, Kordofan and Upper Nile Provinces and the Southern parts of the Blue Nile.
3. The dry sub-humid zone = comprising South Western Darfur, areas of Equatoria and Bahr El Gazal Provinces where elevation is above 500 metres above sea level.
4. The moist sub-humid zone = confined to a narrow belt

⁸See Bhalotra, Y.P.R., "Meteorology of Sudan". Memoir No. 6. Sudan Meteorological Service, Khartoum, 1963.

along the Southern border of the country in the Equatoria Province.

As was mentioned before, the current study is mainly devoted to socio-cultural aspects for the Northern Sudan. However if a climatical approach is intended for the whole country or part of it, Khartoum would be the best choice for design data selection. This is because the severest weather conditions, from the thermal point of view, are likely to occur in this area during the early part of summer (April - June), when the highest daily maximum temperatures, the largest Diurnal temperature fluctuations, the longest sunshine hours and greatest intensities of solar radiation are to be found.

Khartoum, (greater Khartoum) the capital and largest urban centre of Sudan, located at latitude $15^{\circ} - 36' \text{ N}$, and longitude $32^{\circ} - 33' \text{ E}$, lies in the arid sub-desert area in Northern Sudan. This area can be said to have principally two seasons?⁹

1. A summer (April - October), which is hot and dry at first (April - June), becoming slightly humid and relatively less hot later (July - October).
2. A winter (November - March) which is described in Climate of the Sudan¹⁰ as a Season of generally cool and pleasant weather. The humidity is, however, uncomfortable low. Occasionally warm, spells of varying durations prevail. Less frequently, in December - February, the area is affected by

⁹"Climate of the Sudan". Sudan Meteorological Services, KH., Undated Note

¹⁰Ibid

cold waves arriving from the Sahara desert in the North West.

In this area winter does not pose a problem. With a mean daily minimum temperature of 60.6°F winter cannot be considered a season when the heating of buildings is necessary.

Air Temperature

Inspection of the isopleths of Khartoum temperature shows that the highest daily maximum values of air temperature are reached in late April, May, and early June. Records of hourly air temperatures for Khartoum, for the years 1961–84, show that temperature up to 112° are reached in the early afternoon.

The highest daily totals of solar radiation occur at the same time of the year, though days with the highest totals of solar radiation do not necessarily have the highest air temperature; maximum spells of warm days with similar high temperatures and solar radiation totals only sometimes occur. Maximum air temperatures for the day, occurring at 2.00 p.m. local time, sometimes could be 111°F , the minimum 82°F occurring at 6.00 am local time. The total solar radiation for the day (falling on a horizontal surface) could reach 2215 BTU/ft^2 , when 12.0 hours of sunshine were recorded.

2.2. Specific-Towns

2.2.1. Khartoum Area as a Focus of Environmental Research

The main aim of this study is to examine the impact of the Muslim culture on the built environment of the Northern Sudan, particularly, how cultural and social factors influence urban form and space. The main variables of the study are those of cultural values and socio-cultural behaviour. Although the study explores a number of issues the basic one which will be carried throughout the

study is the relationship between the socio-cultural, physical and spatial arrangements of the city. It is this which will be explored. First, a detailed historical background will be given about each study area in greater Khartoum.

The Khartoum area is a unique place to carry out such a study, as it contains a diversity of cities, colonial as well as indigenous. The two cities have lived side by side for decades, each trying to sustain its character, especially that of the indigenous areas against the prevailing winds of change brought about by advances in technology and hygiene. Each city's patterns is a concrete manifestation of its history. However, some changes in form of additions or alterations have taken place, without disrupting the basic pattern. The case material is largely drawn from the Sudan and teachings of Islam, relevant to the built environment.

The absorption of the new colonialism of technology applied to the Muslim World and the impact of a new economy on top of a past colonial and indigenous development, have added a new cultural dimension to the built environment. Generally speaking, most of the Northern Sudanese cities, originally came into being as settlements established by religious people for religious activities. Their goal was to establish their own school voluntarily. When they became famous and developed reputations, many people came and settled around them, and in time the settlement grew larger and larger. Thus a nuclear settlement was established, which could develop to a large village or town in the future. The four settlement under consideration, Khartoum, Umdorman, Khartoum North and Tuti are no exception, although each grew up and flourished in a different era, for different reasons, and under different political regimes.¹¹

¹¹Abu Saleam, 1980, The History of Khartoum in Arabic

The three main settlements, Khartoum, Umdorman, and Khartoum North, which make up greater Khartoum, are different but interrelated places. Greater Khartoum is known as the three cities or the triangular capital. Although they are diverse in character they have a number of basic things in common; (i) their urban centres have hardly any contact with the river Nile; (ii) they are culturally homogeneous; (iii) they are horizontally expanded, as is typical in many Arab towns.

2.2.2. Khartoum

It lies between the Blue and White Niles and is at 1352m latitude. When the Ottoman Empire invaded the Sudan in 1822 they first settled in Sinnar, the chosen capital of the then national rulers. In 1823 the Ottoman's rulers established a military camp in Khartoum and gradually moved their capital to it. In 1830 Khartoum was the capital of the empire in the Sudan. With Khartoum established as the official residence of the new rulers, new neighbourhoods grew up for Sudanese and non-Sudanese, e.g., Egyptians, Greeks, Italians, Syrians, North Africans and Europeans. The indigenous people were already living in separate neighbourhoods which were tribally structures, but bearing non-tribal names. After world war two, the tribal identities merged together. The form and layout was a grid-iron system.

When the Mahadists seized power in 1885 they built their new capital in Umdorman and demolished Khartoum. The new town grew up and flourished with increasing population and trade at the expense of the old one which became a source of building materials.

With the Anglo-Egyptian colonisation of the Sudan in 1898 Lord Kitchener gradually moved his new capital to Khartoum. His main aim was to build a new capital, not on the ruins of the Ottoman Capital, but on European town planning thoughts.

A grid iron system had been applied, with diagonal roads, intersecting at round points. In a sense the whole planning pattern was a representation of the Union Jack of Great Britain, which could be remembered by many generations. The measured, symmetrical grid was evidence of four levels of colonial control. It expressed total control over the environment, with the power to define boundaries and order the space within them. The layout also had a defensive purpose, with the application of wider streets in the grid-pattern, as well as in the diagonal ones. A large portion of the city could be controlled from the intersecting points with artillery. It represented total control over the social structure, the power to order precedence, create communities and control social relationship between them. Fourth, the places created would be filled according to a pivotal plan. The focal point of the entire city was the Governor General's palace, "The Republican Palace", from and around which, the main roads and the intersecting ones radiated. On the other hand, this unique planning pattern has incorporated within it a well planned and studied zoning system. The Government neighbourhood overlooks the Blue Nile. South of it is the commercial zone and the Arabic Market. The non governmental bodies; neighbourhoods were to East, West and South, surrounding the others. The neighbourhoods were divided into first, second and third classes, the sizes, the materials and even the cost had been specified. Military barracks surrounded the whole town. Even the army didn't escape the stratification policy, with the British on one side of the city, and the Egyptians on the other.¹² Following the Western planning thoughts, three statues were planted at key points in streets of Khartoum. Those of Gordon and Kitchener were removed immediately after the Independence in 1956.

After the arrival of the railway, which circled the town, and the growth of

¹²Ibid

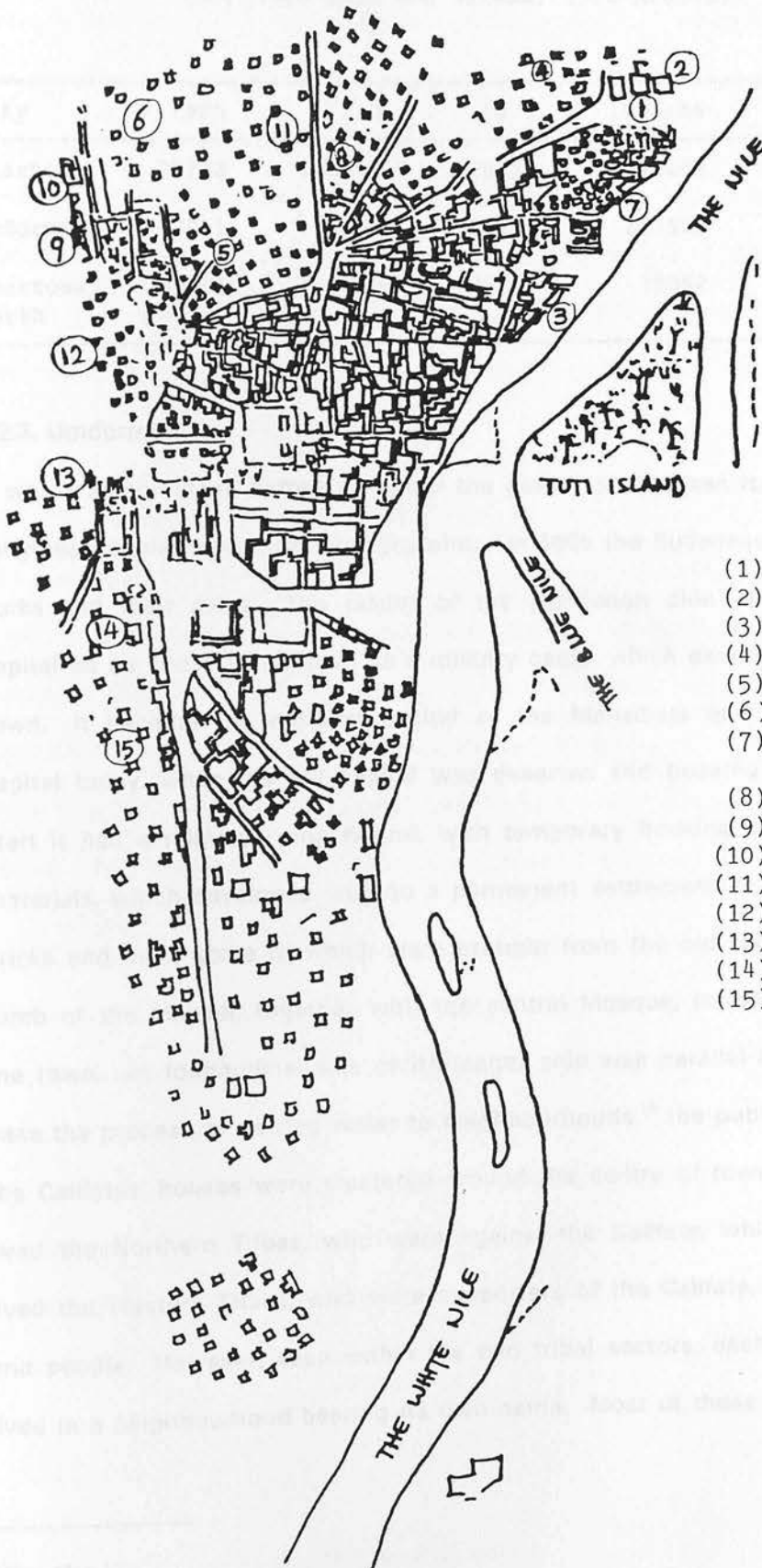
shanty settlements beyond the railway, the main concept of Khartoum's design had been interrupted. So a replanning policy for the shanty settlements has been introduced to continue the same pattern of the main town.

The main characteristics of Khartoum are its wider and more regular streets, accompanied by arcades and trees, compared with Umdorman. Some of these trees which were imported from India and Egypt are in existence today.

Khartoum has a different urban structure, compared with Umdorman. In colonial Khartoum, the houses were open to the environment, with continuous porticos running along their fronts, and the enclosing walls were often substituted by a transparent fences. A western wish for contact with nature is echoed by this form. The status of any particular accommodation was communicated by one or more of ten indicators, i.e. elevation, distance from Government House, size of compound, size of dwelling, width of road, name of area, number and index of house type, e.g., Block 4, 1E', type and quantity of vegetation and the presence or absence of various facilities, most of which have disappeared nowadays. After Independence these houses were inherited by the indigenous elites, and ultimately two-metre high solid walls were erected. After the seventies a considerable number of the houses were converted to offices. In the new Khartoum extension which was designed by Doxiads in the early sixties, the grid-iron system of ancient Khartoum was maintained and the pattern of the porticos has been followed in the commercial streets, so distinguishing them spatially from the residential streets, which are usually defined by closed walls or garden fences. Although the total population of Khartoum has increased since 1925, its population growth is less than that of Umdorman.¹³

¹³Table (1)

MAP (2) UMDORMAN MAP DURING THE MAHADIST (1885-1898)
(BORROWED FROM ABU SALEAM) (1980)



- (1) El Higrah Mosque
- (2) Calif's House
- (3) The Treasury
- (4) El Halween Tribe
- (5) Digeaim Tribe
- (6) El Danagla Tribe
- (7) The Egyptian's Neighbourhoods
- (8) Cemetery
- (9) Women's Market
- (10) The Big Market
- (11) El Masalmania Tribe
- (12) El Rizaigat Tribe
- (13) El Kababeach Tribe
- (14) El Hoomur Tribe
- (15) El Gawama Tribe

Table (1): Shows the population of the three cities since 1925.
(Borrowed from Abu Saleam, 1980-Arabic)

City	1925	1930	1935	1955/56	1965/66	1983/84
Khartoum	78732	103569	110959	93103	173500	476218
Umdorman	32211	50463	46770	113551	185380	526287
Khartoum North	35391	45260	43202	39082	80001	341146

2.2.3. Umdorman

It was a small village before and after the period of Ottoman rule, inhabited by religious people, their clans and students. In 1885 the Sudanese conquered the Turks and their allies. The leader of the revolution didn't like the colonial capital so he chose Umdorman as a military camp, which developed later into a town. It became the national capital of the Mahadists and is the national capital today, while the old capital was deserted and became a ruin. At the start it had a military camp nature, with temporary housing built out of light materials, which developed later to a permanent settlement, built of stone, red bricks and mud, some of which were brought from the old ruined capital. The tomb of the Mahadi, together with the central Mosque, formed the centre of the town. Its longitudinal axis or its longer side was parallel to the river. To ease the process of getting water to neighbourhoods,¹⁴ the public buildings and the Califates' houses were clustered around the centre of town. To the North lived the Northern Tribes, who were against the Califate, while to the South lived the Western Tribes, who were supporters of the Califate, being his tribes and people. However, even within the two tribal sectors, each individual tribe lived in a neighbourhood bearing its own name. Most of these neighbourhoods

¹⁴See Map (2)

still bear the same names to this day.¹⁵ The central market was situated in the Northern part and zoned according to different types of trades. Even women have their own market for segregation purposes. The central part of the town was surrounded by a brick wall.¹⁶ The layout and planning was by the people themselves, with different plot sizes, narrow alleys, small and high level windows. The end product was a unique one, which is a manifestation of the nation's capability of building and planning, which through experience uses the inhabitants, own social, cultural, climatical, biological and geographical knowledge to reflect their way of life.

Later the Califate widened the main streets to accommodate military, social as well as religious processions. A walling system was introduced and applied to individual houses as well as to public buildings. Even the Califate's house was composed of many individual houses, with alleys and fences inside it. The Town's Centres' able bodied male population were obliged to carry weapons when needed. So Umdorman did not have military camps and installation around it for defensive purposes, as is the case of Khartoum.

In 1889, the Anglo-Egyptian rule was back in the Sudan. In order to erase the memory of the nationalist's thrust in the people's minds, and the memory of General Gordon, it was decided to move the capital to the ruined Turkish capital, although at the start the official capital was still Umdorman because Khartoum was just heaps of ruins. It provided continuity for the colonial rulers. The aim was ultimately to destroy Umdorman, and thus the national feeling of the Mahadists. Since many new capitals in Islamic history had flourished and developed at the expense of the old ones. Elfastat and Cairo, Elkoffa and

¹⁵ Map (2)

¹⁶ Abu Saleam, 1980, The History of Khartoum, (In Arabic)

Elbasrrah, and Umdorman and Khartoum are capitals that have succeeded each other. But despite loss of capital status Umdorman didn't die or diminish, largely because of the national feeling and allegiance to Sudanism, although its population was reduced drastically compared with Khartoum during the colonisation era. Its population has been rising since the early days of independence and continues until today.¹⁷

During the Anglo-Egyptian rule, Umdorman has undergone many changes in its pattern, however, its physical character still exists, especially the centre and ancient part. Its basic characteristics are the narrow labyrinth of lanes and courtyards, "Interior Worlds", which are typical of an Islamic city. In Umdorman and the vernacular villages of the conurbation, the Islamic characteristics of a blind alley is relatively rare, but the residential streets have that private and somewhat forbidding character, determined by the densely spaced, closed perimeter walls of the dwellings.

2.2.4. Khartoum North

Since the seventeenth century, there were two religious-based villages. Hillat Hamad and Hillat Khogali, existing side by side. Both were incorporated into Khartoum North at the beginning of this century. They could be considered as the origin of today's city on the site of Khartoum North. There is even a tribal link between those villages adjacent to Tuti Island. Some kilometers north of those villages was El Halfiah, historically a traditional battlefields for political domination among rival tribes. When the Turkish invaded the Sudan in 1822 they did not make Elhalifiah their capital, but preferred Sinnar the tribal capital

¹⁷Table (1)

of the Fonj kingdom at first; then, as described, moved to Khartoum.¹⁸

After the Anglo-Egyptian' colonisation of the Sudan and the arrival of the railway line, it remained the main station for the whole country until the completion of the Blue Nile Bridge in 1928. Although today it could be considered as a natural extension of Khartoum, it was not re-established as such for political motives. As the end of the railway line it became used mainly for industrial purposes. Such purposes were clear when in early days the British built the state warehouses, the mechanical workshops, the harbour, and some of the army divisions' barracks. So, the industrial inheritance was conformed. After independence, all the industries, light or semi-heavy, were situated in Khartoum North. The consequence of which is the large area of low cost housing for labourers, which is the main factor in forming the city's urban pattern. The incorporation of some indigenous villages, plus the introduction of the grid-iron system for the majority of neighbourhoods, made it a hybrid of the two other cities. In the early sixties, the government introduced new housing of first and second class quality to meet different needs.

2.2.5. Tuti

The oldest settlement among the four study areas is on the island of Tuti, formed at the junction of the White and Blue Nile rivers. Tuti was in existence before the foundation of the two villages in 1630 at Khartoum North, as the founder of both villages were originally from Tuti. Today the tribal, clan, and family links between the island and the two villages still exist in form of visits, marriages and the dead of Tuti are buried in Hillat Khogali.¹⁹ Tuti's most

¹⁸ Abu Saleam, 1980, The History of Khartoum, (in Arabic)

¹⁹ Ibid

important characteristic is its pure indigenous urban pattern unchanged since the sixteenth century. It hasn't undergone any alterations as had Umdorman after the enlightenment, nor has the car been allowed in to initiate changes.

2.2.6. Neighbourhoods' Groups

Each of the four study areas composes of different neighbourhoods, except Tuti, which is a single neighbourhood. In total these are twenty two neighbourhoods.

This part of the study is intended to group the twenty two neighbourhoods in the four study areas into manageable groups, in terms of similar planning patterns and the division of internal spaces, regardless of population density, town, and construction materials. From now on, we could talk about seven neighbourhood groups, instead of twenty two neighbourhoods, which are as follows:

Group One

- Buri "in Khartoum": built in the early sixties, for the University of Khartoum's Academic staff. Although it was built in the national era, it is a typical colonial development. Low density, large plot areas, transparent fences – hedges, some of them recently replaced by solid walls, front and back gardens, with heavy plantation and trees. All houses are one-storey and with terraces for outdoor sleeping at night.²⁰

- El Amarat "in Khartoum": allocated in the sixties for high income groups, and government officials. The plots are

²⁰Appendix 5

comparatively large, "800 - 1000m²". All houses are two-stories high, with low solid walls on top of which are plantation or metal bars.²¹

- El Mulazmean (1) "in Umdorman": established in the thirties and the forties by the colonial power, for the rich and senior government official's at that time. The government allocated the land and the individual built his house. The plots are the largest (1600m²) ever given by the government to private ownership. The houses are a combination of one and two-stories, with verandahs linking the interior with the exterior. Although Umdorman is a rocky area, trees, and lawns are grown in the neighbourhood. However, two metres high solid walls are found in all houses.²²

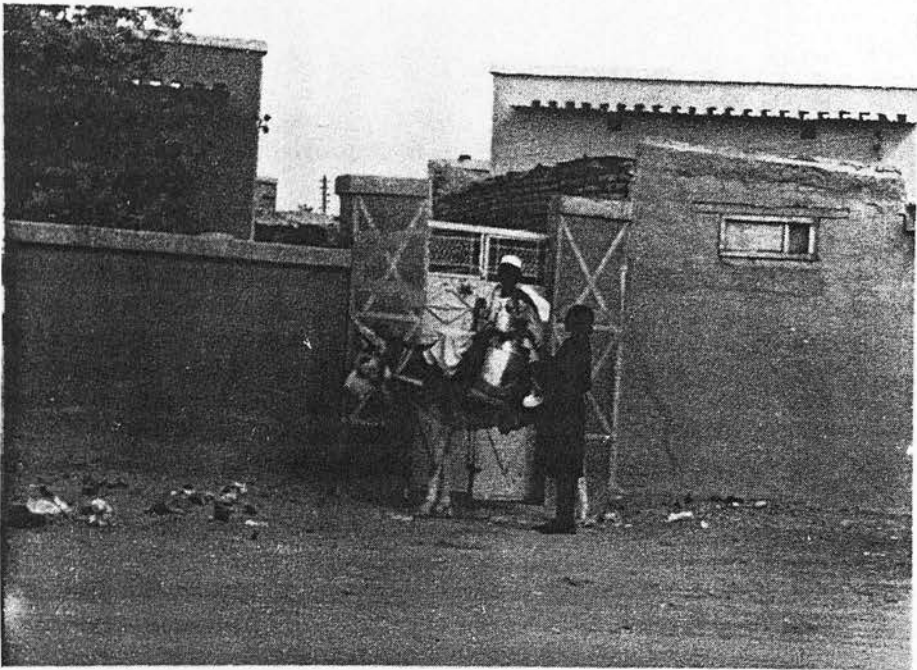
- El Safia, "in Khartoum North": the area was owned by a businessman called Hag El Safia, from whom the neighbourhood has got its name. It was established in the sixties. Because the land was not owned by the government, the plots' sizes are varying. Also it has a combination of one and two-stories, and has a mixture of solid, and transparent fences.²³ Trees are well planted. A traffic management system has been introduced to reduce vehicles' speed, because the area is a linking route to the main centres and other cities.

²¹Appendix 6

²²Appendix 7

²³Appendix 8

Plate (1)



Shows El Murgania (2nd Class) neighbourhood. Although it is a second class, it has a third class physical features (construction, building materials and even behaviour - selling milk).



Plate (2)

Shows El Sahafa (3rd Class) neighbourhood. Spatial extensions to the public areas is common in such areas. Here children were seen playing, eating and resting in such annexed properties.

Group Two

- Khartoum (2) "in Khartoum": it was built in the forties for middle income groups and white collar employees, who were mainly foreigners and Christians. Today they manage to keep their own identity and religion, but are no longer foreigners. Although it is a second class neighbourhood, its plots are large. The majority of houses are one-storey but fewer are two-stories high, and each has a verandah. Also the majority of them have got transparent fences, which later on have been blocked on the upper side with solid steel sheets. The neighbourhood is very rich in trees.²⁴
- El Mulazmean (2), "in Umdorman": allocated mainly to the white-collar civil servants, in the forties and early fifties. Plots' size are reasonable in comparison to the present ones in second class areas. It is a single storey neighbourhood, built mainly of red bricks and stone. Dominated mainly by Sudanese nationals with the exemption of few Indian families. The neighbourhood has got many open spaces, which are in fact not utilised, because they are not properly integrated with the houses. Few trees were planted inside and outside the houses.²⁵
- El Murgania, "in Khartoum North": came in to existence in the sixties. The land was privately owned, which has explicitly affected the plots' sizes. It was not intended to be dominated

²⁴Appendix 9

²⁵Appendix 10

by a specific group of employees. However, those who could afford to pay the cost of the land had the chance to reside there. Although the neighbourhood has been named after an Islamic sector group, the present residents are not mainly the followers of this religious group. It is a single storey neighbourhood, with little plantation.²⁶

Group Three

- El Sahafa, "in Khartoum" allocated for the low income groups in the seventies. More or less, it is divided in, to tribal or clannish homogeneous areas. It has many open spaces which are not utilised properly, and recently most of these spaces have been used for light industries and shops. It has a horizontal character, with mud or red brick construction. The tendency of fencing part of the street for private purposes is well manifested, due to the number of families compared to plot areas provided²⁷. A few trees were planted here and there. Some plots are shared by two families, or even divided in to two plots.
- El Thorah, "in Umdorman": was planned in the early sixties for low income groups and heterogeneous residents, representing most of the regions. The government had provided the land, and the residents did the plans and the construction work. The materials used were red bricks, sun-dried bricks and mud. Few trees were scattered around, and an open rain

²⁶Plate (1); Appendix 11

²⁷Plate (2); Appendix 12

water channel obstructs residents' movements to and from the houses. The road is directly connected to the main route to the centre.²⁸

- El Dangala, "in Khartoum North": was implemented in the late fifties, also for low income groups. The materials used, are a combination of red bricks and mud. Parts of the street had been fenced for private use by individuals²⁹. However, the street is used for parking cars and long heavy vehicles, playing and sleeping, due to its light traffic.

Group Four

- El Hilla El Gadeeida, "in Khartoum": was built in the late fifties and early sixties, for private and public sector workers. For this reason it was close to Khartoum's Industrial Estate. The authority furnished residents with small plots and instructions on how to build on such tiny plots. Houses were built up to the line of the street, leaving the back part of the plot as the only yard in the house.³⁰ The main entrance is directly on the house hall. The materials were not specified: selection was left to the owner. However, almost all houses were either built out of red brick or mud. The residents are tribally heterogeneous.

- El Sika Hadeed, "in Khartoum": this type of house was built in

²⁸Appendix 13

²⁹Plate (3); Appendix 14

³⁰Appendix 15

the thirties by the authority for the railway workers in railway stations along the railway line, both in towns and small villages. The houses are in the form of a tomb.³¹ The main concept behind that was that when Lord Kitchener conquered the Sudan in 1898, he found that the Mahadi's tomb in Umdorman was a pilgrimage and religious centre, for most of the Sudanese. To reduce and diminish this strong religious perception, he decided to accommodate the most poor of people in this very typical form, scattered around the Sudan. The houses are formed by two or three circular huts joined together, with two metre high solid walls on three sides, kitchen and toilet are separate, and connected to the main sewer.

Typical of all Sudanese' houses, there are two entrances, for males and females in each house. The cramped space left inside the house is used for women's activities, and men moved to the public part, where no such traffic is in existence. So the roads are used for sleeping, playing, praying, and large areas adjacent to the house were fenced off, and used as small farms for goats and hens, since almost all residents are rural inhabitants. The material used for construction is red bricks joined with lime.

- El Deium, "in Khartoum North": built in the thirties and forties, under the supervision of the colonial power, to accommodate the workers of the industrial establishment in the country.

³¹Plate (4); Appendix 16

Plate (3)



Shows El Danagla (3rd Class) neighbourhood, where part of the street has been annexed to a house for private use by a family. Trees are important not for human beings, but for cars as well.

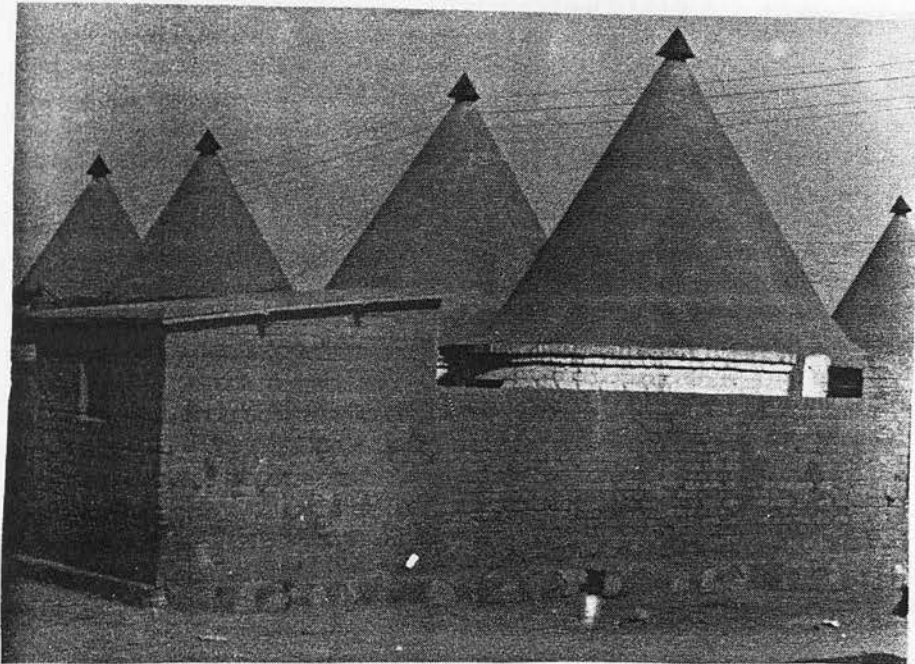


Plate (4)

Shows El Sika Hadeed (3rd Class) neighbourhood. The construction of these houses is unique in the Sudanese context. They do not fit the climate nor to the social life of people.

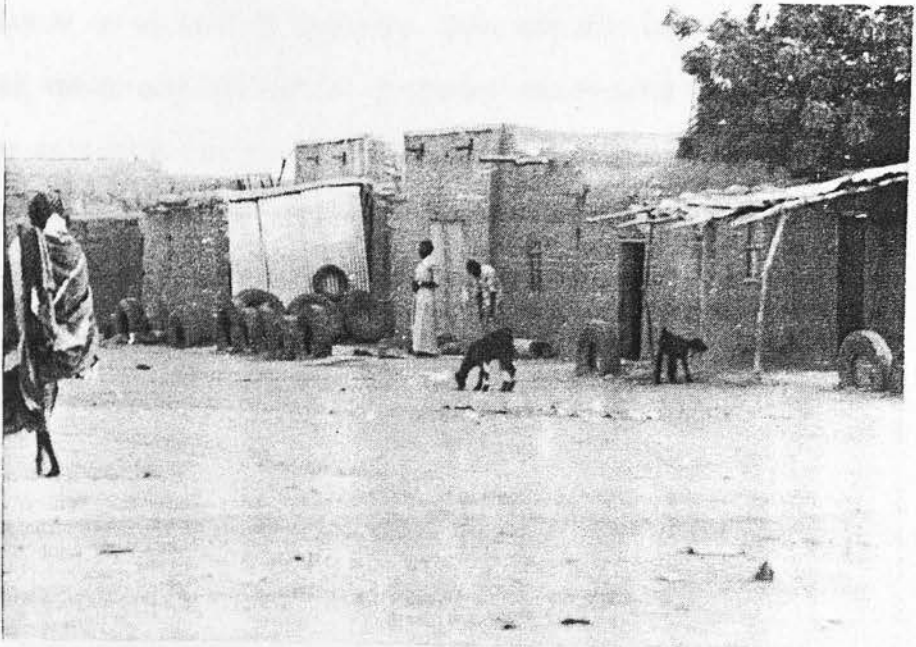


Plate (5)

Shows Falata (3rd Class) neighbourhood. Where parts of the street have been fenced out and used for all kind of activities (cooking, washing, ironing, praying etc).



Plate (6)

Shows El Muradah (3rd Class) neighbourhood. Here the females extended their activities into the street by erecting a tent. This phenomenon contradicts the Sudanese notion of privacy and segregation.

Identical to El Hilla El Gadeeida, both spatially and design wise, the houses are built on the street side, leaving the rear side as a back yard for women's activities. Mud is the main building material used. Large trees were planted in the middle of the roads, to reduce traffic and give shelter and comfort for men's activities.³²

Group Five

- Falata, "in Khartoum": allocated in the late fifties for immigrants from some African countries. At that time it was on the outskirts of Khartoum town, but today it is nearly in the centre of the city. It has the minimum plot size, (100m²), with very wide roads equal to the width of the blocks, longitudinal blocks, in short typical to a military camp. Almost all houses were built out of mud. Rooms, verandahs, pit latrines, were built at the expense of the wide roads, forming many projections into the street.³³ The neighbourhood is self-sufficient, with many corner shops, and local markets, but has no water pipes or electricity.

Group Six

- Umbadah, "in Umdorman": it is a self grown neighbourhood, started in the sixties and initiated by the residents themselves. At that time the land market business started to flourish, so most people possessed, for themselves very large

³²Appendix 17

³³see plate (5) and App. (18)

areas. According to the law, in such circumstances, a person who owned a large area of land will be given one quarter, and the rest will be confiscated for the benefit of the entire population. So many residents have ended up with very large plots' areas' compared with the official Government's standards in the third class areas. Due to the authority's intervention in replanning the neighbourhood, the resultant pattern is more close to the grid-iron system. The fact that the resultant plan is different from the other indigenous neighbourhoods is due to the spaciousness of its plots. The neighbourhood is a mixture of good houses constructed out of concrete and red bricks, and poor houses out of mud.³⁴

Group Seven

- El Gerief West, "in Khartoum": it was in existence before the beginning of the eighteenth century. A typical indigenous Sudanese village, built out of mud, with narrow lanes, which become narrower when approaching the river, because of the value of the agricultural land. It has a homogeneous population. According to the Islamic Law of inheritance, many families today live in their own houses, within the main families' house, sharing the same entrance and amenities.³⁵
- El Rikabia, "in Umdorman": built during the Mahadiest era, and named after a tribe. It was tribally homogeneous, but today most of the residents have moved to other areas when they

³⁴Appendix 19

³⁵Appendix 20

ended up with small plot areas. So either they sold their properties or rented them, consequently new residents occupied the neighbourhood. It is a typical indigenous Sudanese neighbourhood, although replanned by the authorities, to install water pipes, electricity, and some cars. Houses are mainly built out of mud, and dried bricks.³⁶ Trees are rare, due to the rocky topography.

- El Muradah, "in Umdorman": typical to El Rikabia, in the sense that it is ancient, but underwent severe demolition, to replan it. The result of this is comparatively wider streets. Ultimately some of its residents have been given compensatory land in other areas. However it is more intact clannishly. It lies at the main route linking Umdorman with Khartoum. Due to the demolition which took place in the past, red brick construction has become dominant.³⁷ The name was derived from the process of people getting their drinking water from the river, since at that time people did not know of fresh water pipes.³⁸
- Bait El Mal, "in Umdorman": similar to the last two neighbourhoods, in originality and in replanning, which has taken place in modern times, and the changes which took place both socially and physically in the past.³⁹ In the Mahadiest era, it was housing the government's treasury, in

³⁶Appendix 21

³⁷Plate (6); Appendix 22

³⁸See This Chapter (Umdorman); Map (1)

³⁹Appendix 23

the form of food, weapons and ammunition since at that time the modern monetary system was unknown, and it has taken its name from this function.

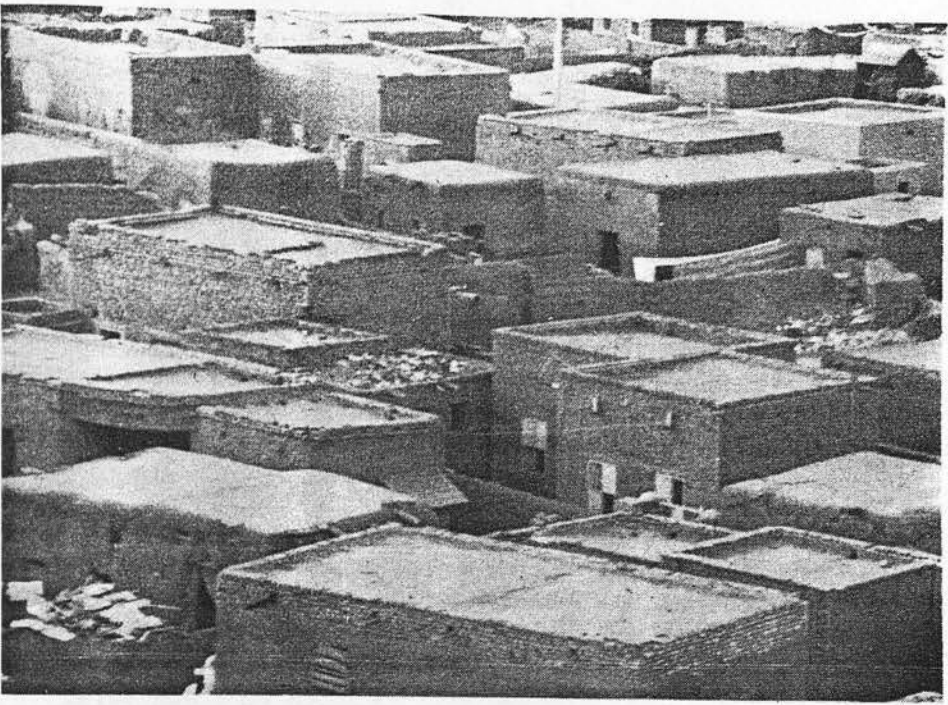
- Hillat Hamad, "in Khartoum North": it was founded in the seventeenth century, by its religious founder.⁴⁰ During the Turkish rule, it was inhabited by immigrant families from Southern Egypt. Today in some parts of the neighbourhood their descendants are living together, in homogeneous clans. As with the rest of the indigenous neighbourhoods, it did not manage to escape the replanning process, which has changed many of its features.
- Shambat, "in Khartoum North": came into existence before the Ottoman Empire rule of the Sudan. Today it has homogeneous clannish residents, despite the replanning process which took place in some parts.⁴¹ Physically it is similar to its indigenous peer neighbourhoods.
- Tuti, "in Tuti Island": it was founded in the sixteenth century, where religious scholars settled with their clans, students and followers. Today it is the most indigenous neighbourhood untouched by the notion of replanning. Its population remains tribally and clannishly homogeneous, and its physical features, narrow alleys, mud houses with all their functional features, remain unchanged and intact.⁴² Its social

⁴⁰ see this Chapter (Khartoum North); Appendix 24

⁴¹ Appendix 25

⁴² Plate (7); Appendix 26

Plate (7)



Shows Tuti Island (3rd class) neighbourhood, with its narrow labyrinth, and traditional mud construction.



Plate (8)

Shows part of Khartoum city, with its geometrical pattern of Baroque, which could be considered out of context in the Sudanese case.

homogeneity, its isolation from the main centre, attracted fewer residents from outside, and at the same time made its population more intact and self-conscious. This is manifested in their recurring massive opposition to any sort of confiscation of their land. The plots' sizes are varying, based on the socio-economic factors of individual families. However, the overall spatial situation is comparatively better than any governmental standards in all classes. The total area of the island, is about six square kilometres, and its population is about ten thousand inhabitants.

2.2.7. The Physical Characteristics of the Four Study Areas

Two basic types of urban structures are found in the four study areas:- the Labyrinth world of the desert settlement, and the geometrical pattern of baroque.⁴³ The three cities are united by the green belt of the Blue Nile, which appears as a natural feature in a desert. The pattern of the greater Khartoum area is determined by the meeting of the great Islamic culture and the magic world of the African culture, with the influential; European culture. Today the three cities are linked to form a ring-structure, which expresses the new situation.

The advantages of the Khartoum area from a research point of view are its several forms of environments, which at one extreme represent Khartoum city as a typical twentieth century colonial city and at the other, Tuti, as a typical indigenous Sudanese village. It provides an ideal laboratory for comparing the cultural forms of the Western world with those of a Muslim community, as well

⁴³Plates (7) and (8); Map of Greater Khartoum

as the indigenous one. It is therefore a magnet and a locus of research. These related characteristics provide a fruitful source for such disciplines, as sociology, history, anthropology, geography, architecture, urban design, planning and man-environment relations.

2.2.8. The Basic Themes

Having stated the research opportunities which can be pursued in greater Khartoum, the study under consideration will specifically cover the impact of the cultural and behavioural aspects on the built environment, with its different cultural based planning patterns and socio-economic factors, such as education, occupation, income, accommodation and family structure, as referred to in Chapter 1.

The research approach will use an inter-disciplinary framework, which of necessity has two strands, i.e.

1. A socio-cultural model, which is the main vehicle of the research.
2. A psychological model for observation, based on Jan Gehl's studies.

It is worth mentioning here that this study is the first of its kind, that tries to relate the Northern Sudanese culture and built environment, and also combines the cultural institutions with behaviour and attitudes?

The goals of the research are:-

1. To investigate and examine the impact of the Northern Sudanese culture on its built environment.
2. To provide a better basis for planning and evaluating living

environments in the Northern Sudan, by giving an account of some of the most important needs of a socio-cultural nature, which should be satisfied for man in his living environments.

3. To make a survey evaluating existing perceptions, with regard to attitude and behaviour in living environments in the Sudan.
4. To formulate design guide lines for town planners, urban designers and architects undertaking design work in the Northern Sudan and other similar countries.

2.3. Existing Planning Policies

2.3.1. Introduction

The Sudan like most Arab and African countries, had not known modern towns before the Turks. It was dominated by nomadic, tribal and rural settlements in most cases. The few towns founded at that time, (i.e. *Sinnar, Soba*), were centres for tribal administration and worship,⁴⁴ and from time to time trade convoys passed them.

During the Ottoman era in the Sudan, *Khartoum* was built as the capital of the Sudan, as has been mentioned in Chapter 2, and Sawakin as its harbour. These events caused changes in the perception and understanding of modern towns.

Later on under the Condominium Administration, (British and Egyptian) many administrative centres had been established in the different regions, to guarantee and protect the flow of goods. Also for this purpose railways, river

⁴⁴ see Chapter 2

links and roads had been erected to link areas of production with the main harbour, (*Sawakin*). When those new centres had flourished, many job opportunities had been created, which in turn attracted many immigrants from rural areas. Thus, gradually, the urban population had increased, this new situation had forced the Administration to create the first town planning central committees in 1946.

After Independence (1956), the rate of immigration had increased drastically especially to the *Khartoum* area. With the progress of the urbanisation phenomenon, the state had started to establish the official bodies to regulate the process of modern planning for both towns and villages. But unfortunately this period has been accompanied with many negative results. So, according to what has been said, we could divide the planning approaches taken in the history of housing in the Sudan into three periods:

1. The pre-Condominium Administration era.
2. The Condominium Administration era.
3. Post-Independence era.

2.3.2. The Pre-Condominium Administration era

History does not tell us that there was any housing problem during this period, because mainly at that time people were living rural and nomadic lives. No modern towns existed and the few founded at that time, were mainly administrative, tribal, religious and trade centres for exchanging goods and passing trade convoys. The total population of the towns was very few. Houses were for the rulers, religious people and the few grass-roots population. All were built out of local materials, (mud and thatch), using inherited local technology and built by the people themselves for themselves collectively,

(*nafeeh*).

As has been mentioned before, during the Turkish era, the Sudan had experienced the modern urbanisation, when they erected *Khartoum* (capital) and Sawakin (seaport). First they were faced with the unavailability of modern building materials and skilled labourers. So they used the ruins of *Soba*, (Ancient Town) in building the Governor's palace; his assistants and the religious people. Later on they brought Egyptians and foreign engineers and skilled labourers to teach the local people the art of modern buildings and modern materials, and for the first time they imported building materials from abroad. This had its impact on the new methods of construction and appeared in the buildings. During this period *Khartoum* population had reached more than 45 thousand.

On the other hand, Sawakin (on the Red Sea coast), had benefited from its location in importing materials and skilled labourers from Egypt, which had been reflected in new methods of constructions.

During the *Mahadist* (1885 - 1898), the mobilisation of population from rural areas to urban areas for *Jahad*, (*Holy War*), had resulted in the creation of large urban centres *Umdorman*,⁴⁵ and *Elobied* in the West. Since the aim of the mobilisation of the people was for *Jehad*, it was not their intention to settle in urban areas, so they soon went back, especially in case of *Elobied*, which at that time had a population of more than one hundred thousand. However, in the case of *Umdorman*, which was the capital of the *Mahadia*, the housing problem had been tackled by the use of local materials, local technology, and by the help of the driving force of the general cultural environment. (*Jehad*). Because at that time there was a belief and concept that life, should be led

⁴⁵Chapter 2

along the *dervish* line of life. Many of their sayings support this, such as (*The real and true house is that of the after life*), (*The more you build higher and higher, you die and leave it behind*).

2.3.3. The Condominium Administration Era:

The aim of the Administration of this period was to support its economic influences by supplying European's factories with the raw material needed. Hence it established strong regional centres, well connected to the main sea-ports. This had dictated the need for well trained civil servants to carry the job, hence the need to house them in the main administrative centres at least. At that time most of them were predominantly subjects of the Condominium Nations, especially the British. For whom houses of very high spatial standard and modernity had been built in the main centres, thus the British neighbourhoods came to existence in *Khartoum, Madani* and *Atbara*. The size of the plot reached up to 1800 square metres, depending on the official rank of the resident. This high spatial standard originally developed in India, together with the concept of the bungalow, then in the late nineteenth century diffused to Africa and other parts of the Far East.⁴⁶ In siting colonial neighbourhoods religious or economic considerations were replaced by other criteria. These were culture-specific concepts of 'sanitation' and preferred kinds of visual experience. Wherever possible elevated sites were chosen which gave 'facilities for drainage, healthiness of soil' and access to water. To achieve these goals, design ideas, building materials and construction methods had been imported from Europe. Consequently the public sector's role in the building industry and housing had flourished. This role had been reflected in encouraging civil servants to build their own houses by giving them land and

⁴⁶King, 1973a, 1973b

mortgages according to their status.

This concept of classification had officially been put into law, (the legislation of division of housing land) in 1906, to include the housing of the population at large. The legislation divided residential areas to three classes, first; second and third. It specified both the minimum standard of construction material and cost of a house in each class. Specifically, it specified stone and red brick as a minimum standard of materials and L.S 500 (£Sudanese) as the minimum cost of a house in a first class area. For second class areas the legislation specified stone and red bricks as the minimum standards of materials of external walls, and L.S. 300 as the minimum cost. Strange enough it did not specify any standard, (maximum or minimum) for either construction materials nor the cost of third class areas. This had been left to the financial ability and variations between individuals. It was known that most people in third class areas, cannot afford to build with stone and red bricks, but rather with mud and traditional construction. However, if few afford to built with stone and bricks, that would not make any harm to the third class area.

The main objective behind the whole exercise, (the grid-iron system and the classification system), was political,⁴⁷ and to a lesser degree health consciousness.

Around the time of the previous legislation; witnessed the enforcing of another important policy measure; the decision to finance the initial stages and local community services, (i.e. water pipes, planning the site, etc) of new housing schemes, on revenues from auctions of the land allocated for the same purpose. The new system was considered an initiation of the system of site and services which was later adopted by this official practice. The system

⁴⁷Chapter 2

developed by the government is responsible for the preparation and partial servicing of housing land in which future residents hold the responsibility for the development of their individual plots. Although the system was designed as a self-financing scheme for the new housing projects, its implications have immensely influenced the overall housing policy, to the extent that it is now considered as one of the major pillars of the general housing policy.

The flourishing of the new neighbourhood and their job opportunities encouraged mass immigrations from the rural areas. This situation helped in increasing the urban population which in turn dictated the necessity for planning to guarantee a healthy environment. Consequently the Governor-General of the Sudan appointed a central town-planning committee in 1946. Entrusted with the planning of new neighbourhood and replanning ancient indigenous neighbourhoods.

During this period, the housing problems had been lessened due to the following reasons:

1. The widely spreading extended family phenomenon. The rural immigration had used intensively the local traditional materials, the inherited traditional building construction methods.
2. The utilisation of group co-operation, (*nafeer*) in the building process, which is widely used in all aspects of daily life in the rural Sudan up to today.

2.3.4. The Post Independence Era

After independence in 1956, and the cancellation of: "The close regional law", which was enforced in the early twentieth century to curtail the movement of people between regions, an immense flow of immigrants from rural to urban

areas had started. This also had been encouraged by the new economic and industrial policies of the national government. Thus most of the new industries had been centred in the national capital, this in turn also encouraged the immigration towards the capital and main urban centres.

One of the most serious concomitants of the process of the rapid urbanisation was the diminishing of the extended family structure, and ultimately the emergence of numerous nuclear families which started to acquire separate households. This process had aggravated the housing problem and increased the rent and the building industry, (materials and labour, beyond the economic ability of the majority of the population), (more than 80%). Consequently the phenomenon of the slum appeared at the peripheries of large towns.

To encounter this the government had constituted a lease binding law, and had allocated plots on opened and closed auctions on the basis of providing plots and mortgage systems to civil servants and the public. They had also made some experiments in low cost housing for the low income groups on the basis of lease ownership.

This period was characterised by the diminishing active role of the government in housing, and limited to administrative and legislation roles only. To enhance this role, "The Town Planning Law" was enforced in 1956, and later on "The Town Planning Regulation" was enacted in 1957, in order to guide and oversee the development of urban areas. Part of that regulation was directed towards the division of housing land. This division was based on the economic status of the beneficiaries of that type of land, which had further strengthened the 1906 division of housing land, mentioned before. This new regulation even went further by dividing the housing land into four income group residential classes, first, second, third and fourth. Corresponding to the high, middle, low, and very low income classes respectively. The regulation also recommended

minimum space standards for the housing plots of the upper three classes which were given as follows: 200 sq. m. for the third class, 300 sq. m. for the second class, and 400 sq. m. for the first class.

Later on, and during the same year, the central town planning board had substantially increased the minimum space standard recommended for each class. The new space standards were as follows: 300 sq.m. for the third class, 400 sq.m. for the second class and 800 sq.m. for the first class, which were in line with the 1947 "The Towns and Lands Schemes".

During the late fifties the Government commissioned Doxiadis Associates, the prominent planning consulting group to plan the large towns, (*Khartoum, Umdorman, Khartoum North and Port Sudan*) and to give advice on their future master plans. The findings and recommendations of the consulting group could be summarised in the following points:

1. There are unjustifiably high space standards of the various categories of land uses in housing areas. For example a high proportion of housing schemes' lands had been allocated for roads and public open spaces,⁴⁸
2. The report criticised the high space standards of housing plots and recommended new ones (without proper social base), lower than the official ones, but similar to them in their economic base. However, the new recommendations range between 120 sq.m. for the lowest income groups, to 720 sq.m. for the highest income ones,⁴⁹

⁴⁸Doxiadis Associates, May 1959, p. 192, 236, 280

⁴⁹Doxiadis, 1959, p. 192, 236, 280

3. The report cautioned against the following of such spatial policy, and its adversely reflection in high cost of communication, and escalation of the initial cost of housing schemes.

As alternative means of avoiding such shortcomings, the report recommended the following policy measures:

4. The decrease of housing plot size, and the introduction of a more economic space standards of roads and the implementation of a more economic, general, layout of housing areas.⁵⁰

2.3.5. The Housing Policy in the National Economic and Development Plans

The Sudan had witnessed the following development plans since independence:

1. The ten-year plan (1961 – 1970).
2. The first and revised-five-year plan (1971 – 1976).
3. The six-year plan (1971 – 1983).

However, the outcome of the three development plans on the housing sector had been more or less the same, which could be summarised in the followings;

1. The share of the housing sector in these plans was very low (1.5%) of the national gross income, compared with the minimum recommendation of the United Nations for developing countries, which is 9%.

⁵⁰Doxiadis, 1959, p. 117

2. Allocating land plots by means of opened and closed auctions for beneficiaries.
3. Constructing low cost housing for workers on the basis of leased ownership.
4. Constructing government houses for civil servants.
5. The up-grading of some of the slum areas by a replanning process.
6. No change in the classification policy. Even the sizes of the plots in each class did not change in most cases. When it did change by decreasing or increasing, it was of no scientific basis.
7. Giving a specific space standard in percentages for public facilities, (35%) and roads (20%).
8. The public facilities share which was intended for erecting primary schools, health centres, mosques and communities' centres, eventually had been converted to small industries zones, such as Bakeries.
9. Little attention had been paid to communities' open spaces.

2.3.6. The 1964/65 Population and Housing Survey

"The 1964/65 Population and Housing Survey" had been set up to investigate the average household size and rate of occupancy in *Khartoum* areas housing schemes. It facilitated the testing of the validity of the official policy of plot sizes and the system of classification of housing areas. The survey had covered different income class residential areas of the three towns. The findings of the

investigation were so important that they could dispute the validity of the whole system. Nonetheless, these findings could be summarised in the following:

1. *Khartoum*:- it had 4 persons per house plot in the first class areas and 6 persons per house plot in the third class areas, and the average rate of occupancy, it had 1.1 persons in first class areas and 3.0 persons in the third class areas.
2. *Khartoum North*:- for the average household size, it had 4.6 persons per house plot in first class areas and 6.8 persons per house plot in third class areas. For the average rate of occupancy, it had 1.5 persons in first class areas and 3.6 persons for third class areas.

The general pattern and distribution of the household size and average rate of occupancy across the various income class areas revealed major inadequacies of the current space standards in housing in the Sudan, which was based on a single variable; the economic status of the beneficiaries. These inadequacies had been evident in the underoccupation of plots in the high income class residential areas, as well as, the overcrowding of those in the low income class ones.⁵¹ In response to those inadequacies, Elias in his Ph.D. Thesis,⁵² recommended the consideration of other variables, such as the family size and type in any decision about the space standards of housing plots.

⁵¹Tables (2) and (3)

⁵²Edinburgh University, 1970

Table (2): The relationship between houses, rooms and persons.

(Borrowed from Doxiadis & Associates, May 1959)

	Khartoum	Umdorman	Khartoum North	Average of three towns
Persons per family	4.4	7.1	5.7	5.6
Room per house	3.3	3.9	3.2	3.5
Families per house	1.6	1.3	1.5	1.4
Persons per room	2.1	2.3	2.6	2.3
Persons per house	6.9	8.9	8.5	8.1

Table (3): Types of occupancy in the three towns.

(Borrowed from Doxiadis & Associates, May 1959)

Type of occupancy	Percentage of houses			
	Khartoum	Umdorman	Khartoum North	Three towns
Owner occupied	40.0	62	56	53
Rented	53.5	31	36.5	41
Partly owned)	0.5	2	6.0	2
Partly rented)				
Free	5.0	5	1.5	4
Total	100.0	100.0	100.0	100.0

2.3.7. The 1967/68 National Household Sample Survey

This survey had been conducted in the urban areas of the Sudan to investigate the average household income in different classes. The revealed findings of the survey had cast further doubts upon the adopted system of classification of housing areas.

The part of that survey which measured the median of the household income registered L.S. 390 for Greater *Khartoum* and L.S. 290 for Port Sudan town. The general results of the survey showed that the majority of the urban population falls within the low income group. This was in line with the results of "The 1955 Population Census", which shows that 85% of the total population falls within that, same, income group. The findings of 1955 Population Census and 1967/68 survey are considered as indicators of the invalidity of the economic argument behind the system of classification of housing land, which in reality admits that the financing and servicing of the housing land of 85% of the population depends on revenues from sales of the same type of land to the remaining 15% of the population. The refutation of this economic argument, considered together with the inadequacy of plots' sizes in relation to families' sizes, brought the whole system of classification into question.

2.3.8. The Average Gross Residential Densities During the Sixties

In the early sixties the United Nations had sponsored an investigation into the housing conditions in the African continent, the findings of which were published in 1966. These findings pointed to very important information about the average gross residential densities in the Sudan in comparison to other countries in the African continent. The densities for the Sudan vary from 15 – 65 persons per acre for first class residential areas to 60 – 65 persons per acre for third class ones. The densities for the majority of North Africa's countries are in the range of 300 persons per acre, while those of most East and West African countries vary from 150 to 200 persons per acre. The Sudan was ranked as the lowest country in the African continent in terms of such densities.⁵³ However, towards the end of the sixties the densities increased to 24 – 36

⁵³Housing in Africa, United Nations, 1966

persons per acre in the first and second class areas to 60 - 80 persons per acre in the third class ones.

The official dwelling space policy and its adopted high, overall, standard was identified as one of the major factors behind the curtailment of housing in the "Ten Year Plan".⁵⁴ The shortcomings of that policy had been evident in the consumption of housing land, escalation of the cost services component, and the aggravation of the transportation problem in housing schemes being implemented as part of that plan.⁵⁵

The shortcomings of that policy had been evident in the consumption of housing land, escalation of the cost services component, and the aggravation of the transportation problem in housing schemes which had been implemented as part of that plan.⁵⁶

⁵⁴Ahmed, A.E., M.Phil. Edin. Univ. 1974

⁵⁵Elias, E.O. Ph.D.. Edin. Univ. 1970

⁵⁶Elias, E.O. Ph.D.. Edin. Univ. 1970

CHAPTER 3

CULTURAL INSTITUTIONS

3.1. Introduction

"Every man is, in certain respects,
Like all other men,
Like some other men,
Like no other man."

C. Kluckholm¹ in his review of the major schools of thought aims at explaining urban social and spatial patterns, Sjoberg² draws attention to the influence of technology, cultural values and social power. Referring to the impact of science and technology on the city, he concedes that "considerable data have accumulated suggesting that cultural values and power factors ... may induce major distortions in the ideal of actual patterns results from technological change".³ In the case of colonial urban development it is clear that the form of 'social power' enables a particular culture to use its own forms of science and technology to establish a distinct social and spatial environment. In short, environments manifested the distribution of social power and expressed it in a culturally specific way.

In an expert's report produced in 1973 for a middle east estate, there was, according to an indigenous observer, "A mediocre housing survey with many photographs of open desert and romantic picture of Bedouin children and animals."⁴

If such blatant examples of cultural imperialism are now less likely to occur,

¹C. Kluckhohn and H.A. Murry, Ed., *Personality in Nature, Society and culture*. 1953, p.53).

²Sjoberg, 1965a, pp.170-8

³Ibid, p.170: see also Wheatley, (1963)

⁴*Architects' Journal*, 12 Dec. 1973, p.456

new modes of dependence arise in the transfer of 'models' and 'techniques'. The term 'tropical architecture' has long been a misnomer on two accounts – first, in implying that the major influences on built form are climatic rather than social and cultural; second, in ignoring the relationship of economic, cultural and political dependence inherent in colonialism, which has permitted such 'architecture' to occur. The term 'colonial architecture' was more accurate and honest.

Where political circumstances have changed, new economic relationships encourage cultural dependence in a different form. Oil rich states of the Middle East, anxious to *modernise* traditional societies in years rather than decades, look round for professional advice. Multi-national and metropolitan companies are only too willing to assist. Yet in the process of importing the high-technology environments of the West, little thought is given to the consequences, whether in terms of energy consumption, the need for skilled manpower to maintain them or, most important of all, the disruption of social and cultural institutions which is involved. It is evident from professional comment that cultural imperialism in 'The present exploitation of developing countries in the Middle East', is producing "Meaningless Arabianised versions of living patterns that are entirely European in their cultural values".⁵

Whilst this particular situation is unique, the solution to such problems in the less affluent, post-colonial societies is neither simple, nor, for each society or city, is it the same. Communities need housing; employment must be generated and environmental decisions made. In making such decisions, the relevance of external models and experience is limited. With regard to norms

⁵Ibid., also 13 August, 17 September, 17 October, 1975

about 'density', space standards or larger questions of 'over-urbanisation'⁶, external models are not only irrelevant or even nonfunctional. In most cases, the colonial city was divorced from its hinterland, becoming an appendage of the metropolitan economy.⁷

However, fewer studies have been devoted to the effect of the Western civilization or urbanisation around the world. Whether it be in colonial or the post-colonial era one of the prominent writers in this field is Anthony D. King,⁸ who compared the indigenous Indian built environment with that of the colonising British rulers, on the grounds of cultural institutions and social needs. However King noted that until recently, our understanding of urbanism was dominated by theory derived from Western industrial and post-industrial models.⁹ Only in the last two decades however, have urbanists begun to see that much of what was previously accepted as 'universally applicable urban theory' has been based on a historical western ethno centrism. Increasingly we find that models or theories developed in the context of western industrial urbanisation do not fit the majority of cities in the non-western world and particularly, in the 'colonial' or 'postcolonial' cities of Asia and Africa.

Here, as McGee, Hauser, Ginsburg, Bose, Qadeer¹⁰ and others have pointed out, neither general theories of urbanisation, (such as those predicting certain theories of urbanisation, or those predicting certain types of relationships between demographic, urban and economic indices), nor theories of

⁶Solvani, 1966; Bose, 1971

⁷The work of S. Amin, A.G. Frank and others influential in the development of dependency theory is discussed in Oxaal et al (1974) and Brookfield (1975).

⁸King, A.D. 1976

⁹Wheatley, 1969, p.3

¹⁰McGee (1971); Hauser (1965); Ginsburg (1965); Bose (1971); Qadeer (1974)

socio-spatial structure, or of the socio-psychological characteristics or 'urbanism' are found to apply.

There is sufficient evidence to suggest that the colonial city might be treated as a distinct type. Wheatley has suggested that the cultural hybrid of the colonial city, which typically subsumes elements of both the traditional and the modern world, and which consequently might have been expected to have excited the curiosity of urbanists, has in fact attracted little more attention than the traditional city proper ... only 'recently' has there been any attempt to particularise the specifically colonial features of this city centre and to integrate it into a general theory of urbanisation.¹¹

King suggested that his studies:

"Suggest major differences between cities and models of spatial arrangements hypothesised for western cities. The nature, causes, and longevity of these differences provide an admirable field for both theoretical and applied research"

one can speculate that technology, levels of living, capital available for urban improvement, caste and ethnolinguistic and religious diversity, and other cultural concomitants are involved, but to what extent and for how long?

These and other factors suggest that the study of colonial urban development has considerable theoretical significance – part of which *socio-cultural and behavioural* the current study is going to uncover.

Since the main idea of the study is to explore the relationship between the Sudanese culture and their existing built environment, this chapter is devoted to the examination and the discussion of the Sudanese cultural institutions, *core of culture* Which are directly or indirectly related to the built

¹¹Wheatley; 1969, p.31

environment. However, the reasons for implementing this approach will be explained in Chapter 4. Where a full account of E.T. Hall's¹² analysis will be given.

For an understanding of the physical-spatial structure of the Sudanese city, the most useful aspect of Smith's analysis,¹³ is his focus on institutions as the core of the people's culture. For it is evident that any physical or special aspect of the colonial city, in any cultural section, relates to the provision made for a particular institution in that section. As all structures or special areas are related to some human, social or cultural purpose, to understand these purposes requires the understanding of the institutions of the culture. It follows that to understand the institutions is to understand the particular built forms to which they gave rise. Our task, therefore, is to identify the basic installations and examine them with reference to the physical-spatial urban form of the Sudanese city. In doing this, each 'dimension' or 'level' of the institution should ideally be considered, that is, its related set of ideas and values, its associated forms of activity and behaviour and its pattern of social relations.

In a culturally homogeneous society, as in the Sudanese case, such institutions as marriage, the family, religion and the like are common to the total population. Where cultural plurality obtains, different sections of the total population practise different forms of these common institutions. In a culturally divided society, each cultural section has its own relatively exclusive way of life, with its own distinctive systems of action, ideas and values and social relations. Often, these cultural sections differ also in language, material

¹²Hall, E.T. 1974

¹³Smith, H., p.1883

culture, and technology.¹⁴

In the following analysis, the basic institutions considered are those of Islamic laws and religion, kinship, family, marriage and marital residence, privacy, territoriality. These are discussed selectively and primarily with reference to the urban forms and spatial areas to which they gave rise. Other important aspects of culture impinge on the above mentioned cultural institutions. These aspects are for example status and role, how the sexes interact, places of interaction, sexual roles, use of group property, areas assigned to individual by sex, community territory, men's and women's territories, space, formal informal boundaries. However these cultural aspects and the cultural institutions will be arranged in a map form (*map of culture*) borrowed from E.T.Hall in Chapter 4 *methodology* based on the Sudanese priorities.¹⁵ In this respect elaborated discussion of territoriality and privacy in the literature, is outwith the scope of this thesis; which will assume cultural institutions according to the Sudanese terms. Regional variations are ignored in this discussion, too, since they are negligible, however they have been catered for in the field work *questionnaire and observation*.

3.2. Religion

As far as we know, all societies have possessed beliefs that can be grouped under the term "Religion". These beliefs vary from culture to culture. Since the institutions of religion find different expression in each culture, these differences are likewise reflected in the physical-spatial environment.

Although the majority of Muslim countries do not implement *Shariah Laws*,

¹⁴ M.G. Smith. The Plural Society in the British West Indies, 1965, p.81.

¹⁵ Hall, E.T. 1974

Islam, as a religion is embedded in almost all aspects of life in the form of personal commitments to the Islamic teaching, such as inheritance, worship, etc. It is often difficult to separate the religious (or economic or political) from other aspects of culture. For this reason many cultural institutions will be discussed under Islamic Laws, such as land ownership, privacy and segregation between sexes, neighbouring rights and law of inheritance.

3.3. The Effect of Islamic Laws on the Built Environment

The Islamic legal system is value-centred; law exist to realise certain value goals. For an Islamic civilisation, the purpose of all planning must therefore be to realise the ultimate objectives of Islamic Law "Muqasid Al-Shariah".

3.3.1. Land

Land is declared to belong first to Allah, then to his messenger, upon whom be peace and Allah's blessing, after his death the state, then to the Muslim community. This amounts to human trusteeship or stewardship, rather than absolute ownership. The right to enjoy private property and its protection from *usurption* are secured in the *Ahadith*, as is public ownership of scarce and indispensable resources, including water, pasture, fire, wild life and minerals.

According to Islamic Law, Allah is the ultimate owner of all things, and human beings must manage them in accordance with the will of their sustainer for the greatest good to all his creatures. Among the important principles of land use which safeguard the objectives of Islamic Law, is the concept of the abuse of rights. *Malik Ibn Anas and Abu Hanifah* formulated the principle that the exercise of a right is permitted only for the achievement of the purpose for which the right was created, that the exercise of a right is illegal where it results in excessive harm, and if used to bring injury to others rather than for

the benefit for all, (the community at large).

Land is the crucial factor in determining the shape of human settlements. To what uses the land will be put, how these uses will be determined, what balances will be struck between ecology and the built environment, and what mechanisms should be there to achieve the specific objectives. These are the basic questions that urban planners must seek to answer, keeping in mind the unique characteristics and values of the society to ensure harmony between urbanism and the environment of the city.

Institutions governing land tenure in Muslim countries are unique – in the countries which were once under the influence of the Ottoman Empire, land is categorised as *Milk*, *Miri*, *Wag* and public land, with rights of ownership differing from category to category ¹⁶ – numerous changes have occurred since, but the basic structure of this tenure system has not altered substantially.

3.3.2. Property Rights

Briefly, the rights of private and personal ownership are accepted in principle for both portable and nonportable property. But Islamic Law does not accept private ownership of all types of land. If private land comes into conflict with the public use of land, priority is always given to the latter. Under *Al Maslh El Mursahal* Law "Beneficial Action", a private land can legally be acquired for the public benefit, "i.e. the construction of a road, bridge, a Mosque, a cemetery, etc", and the owner can never prevent this. The well known Islamic jurist, *Abu Yousuf Yagoub*, said, if there is in reality no public need for an unoccupied land, a hypothetical public need must be thought up for the benefit of the

¹⁶El-Ricaby, 1956

community. The right of men and women to private property is established to safeguard the individual's full freedom for creative, beneficial use of property, and it cannot be revoked by anyone in authority except for a clear public need and for prompt and just compensation, or in a clear case of misuse or mistreatment. However, the Islamic Law has given the individual the right to defend himself, his family and his property, if it has been attacked. Islamic Law does not permit the degree of collectivisation or regulation by the state found in contemporary socialistic regimes.

The exercise of private property rights is, however, circumscribed by the greater needs of the community in ways resulting in net harm to society or the creation as a whole, according to Islamic principles of social solidarity *Takaful*, and the abuse of rights. The rights of ownership are thus limited by the similar rights of others and by the public interest, and the ownership ceases if the welfare of the community demands, or if the need of another individual reaches extreme necessity. Nor does the owner have an absolute right of disposal with regard to living things; he is forbidden to mistreat his animals or kill them except for proper purposes and proper methods, besides some environmental limitations which will be mentioned in the coming paragraphs.

Although Islam accepts private ownership and encourages it, it does not value rich people merely on their economic merits or status role. On the contrary, individuals are valued according to their deeds towards the Muslim community, (the pious person is valued better in God's eyes than the rich one), based on this value system Islam does not recognise classifications systems, whether that being on income, occupation, race or any other sort of classification. This Islamic equality has created unique neighbourhoods within the Muslim countries, where the poor and the rich, the ruled and the ruler, the layman and the judge, all live together, regardless of status or income. Sharing each others sufferings, grievances as well as pleasure and happiness. Such mutual

sharing ranges from the daily tiny reciprocal needs to the community's properties (utilities and open spaces). This intermingling and complex sharing phenomenon has created a very strong social relationship in a specific neighbourhood. In this sense the community has managed to protect and secure its members, their properties and defend its territory. Not only that which is on a voluntary base, but in a Muslim community, the Islamic Law *Zakat* takes a fixed percentage of the rich people fortune (2%) and distributes it among the poor annually. By doing so it safeguards the break down of the Muslim community. Based on this perception of the community, Prophet Mohammed peace be upon Him, said that, "The Muslims in their collective sympathy and support like a human body, if one of its parts feels sick, the whole body feels sick too".

This concept of equality, plus the concept of privacy rights in Islam have contributed to the horizontality of the Muslim's cities in the past, and to some extent up to day in some Muslim's countries.

Almost all the Islamic Laws have been constituted to protect the individual and the community at large ritually. Thus, enhance the feeling of security and satisfaction. Such feelings will deter people from committing any wrong deeds. For instance, the equality in Islam, the *Zakat* (money taken from the rich and given to the poor), drinking alcohol, committing adultery, property rights, neighbouring rights, inheritance law, etc., all are there to bring up the individual religiously and protect him against the devil.

3.3.3. Privacy and Sex Segregation

Privacy is a widely used term, and, as with so many other terms, people often assume that there is an agreement on its meaning. However, the fact is that

there is no complete consensus.¹⁷

The concept of privacy appears in the literature of several disciplines – psychology, sociology, anthropology, political science, law, architecture, and the design professions. One group of definitions of the term emphasises seclusions, withdrawal and avoidance of interaction with others.¹⁸

A second type of definition puts less emphasis on exclusion, but implies that privacy involves control, opening and closing of the self to others, and freedom of choice.¹⁹

These definitions are not compatible entirely in our case. Altman in 1984 found that people in some cultures have been described in the anthropological literature and elsewhere as seemingly unable to avoid or shut off interaction with others. This situation is typical in the Sudanese community, but with regards to male population.

In our case privacy will be defined as, 'seclusion of the female population'. Not only from the outside world, but within the household, sexes are segregated physically and socially. This provision of segregation is meant to cater for any casual visitors, who should not be allowed into the opposite sex domain. However, privacy for males in such a sense is unknown in the Sudanese society. Since the males' domain is open to any body who wishes to go in for any purpose. Not only that, males in most cases move to the semi-private part of the house to welcome passers by for a chat or even a meal in the fasting month *Ramadan*.

¹⁷Altman(1975)

¹⁸Bates (1964), Chapin (1951) and Jourard, (1966)

¹⁹Westin, 1970, Rapoport 1972, and Proshansky, Ittelson and Rivlin 1970

An important feature of cultural factors in privacy regulation is that different societies have evolved alternative mechanisms and behaviour. Some cultures do not rely heavily on environmental mechanism as other cultures (our case), but use nonverbal, verbal, or other means. And, the author agrees strongly with Westin's (1970) thesis, that societies probably have some mechanisms to achieve privacy regulation, although not always in the form of physical environmental control.

These mechanisms are implemented to give the desired levels of privacy, such as verbal and preverbal behaviour, non-verbal use of the body, environmental behaviours and cultural norms and customs. What concerns us here, is the environmental mechanism, in achieving family privacy and sex segregation within a house required by Islam.

In Islam, maximum segregation between the sexes is required outside the kin group. Private space is safe and secured, and public space is completely unsafe and must be avoided by families. To be able to see into a house more than a passer-by through the street, is considered to cause great harm and damage, and Muslim Law has always insisted on the removal of the damage. Other important limitations on private property rights concern easements, protection of women's privacy with regard to the design of buildings and placement of windows, and prevention of land reclamation where its results would be injurious. Islamic Law thus places more restrictions on the use of property than does Laissez Faire capitalism. The concern for privacy was reflected in the physical forms in several ways. Among these are the two meter high solid walls, the placement of entrances in the street, the provision of back and front yards (or the court-yard system), avoidance of the architectural treatment of windows on the street, and the limitation on building's heights throughout the city. The Maliki scholars did not allow the opening of an entrance door in front of another one or adjacent to it. There

are numerous cases which deal with the intrusion into the privacy of residents as a result of facing buildings with varying levels. This intrusion is usually effected in two ways, one is the opening of windows, the other is the use of the roof top. Since most Muslims' cities are within the arid climate zone, the roof serves a basic function during summer. As regards the use of the roof, we have the opinion of *Sahnun* in a case regarding the use of the roof top of a mosque, overlooking some houses. There he emphasised that a protecting wall must be built, and that no one was to be allowed to pray there before it was walled.

Islam does allow the two sexes (strangers) to interact separately in the daily life, such as in markets, provided that the two sexes (adult) do not intermix, and females should be wearing their Islamic dress. However in other urban settings, such as schools, Mosques, offices, services (tailors, barbers, etc) each sex should have its own settings. Not only that but in transportation, daily needs, queues and socialization, the community has provided for each sex separately.

In the Muslim community, each sex has a specific role to fulfil, males are obliged to work to support their families subsistence, on the other hand females are responsible in bringing up the young, since they are well prepared and fit to do this job. However, if they have no child obligations, they could do paid jobs, since they have proved their capability to do such jobs, provided they obliged with the other Islamic rules (segregation).

The perception of sex segregation, sex roles, places of interaction between the two sexes, each sex territory and areas assigned to it, are reflected in the following characteristics in the Muslim city, besides the ones mentioned above:

1. The provision of two separate yards, men (front), and women (back) yards, or court-yard houses in some areas (in

the past).

2. The erection of two-metre high solid walls to protect females (privacy) from strangers and passers-by.
3. Insignificant female contribution in public environment.
4. The semi-private space adjacent to individuals house is considered part of the house, to safeguard the property and protect the family's members (females) and in most cases such space is protected by means of low level markers, (stones, bricks, tyres, etc), people sitting and chatting, plantation or complete fencing.

So, regarding the relation between sexes and spaces, the Sudanese society considers all public areas are formal spaces for the interaction of the two sexes, but less formal in the house, where all members of the family are allowed to interact freely provided that there are no strangers from each sex.

3.3.4. Neighbouring Rights

In the Islamic Law a special relationship between proximate neighbours should be maintained which to some degree had created and sustained the Islamic City. In most Islamic cities, the accretion of legal precedents has created a highly sophisticated set of property rights, whose exercise was heavily contingent upon acceptance or opposition by proximate neighbours. A very special relationship codified by law existed between families sharing a common access or easement. Islamic Law, in contrast to Roman/Western Law, recognized that the misuse of urban property or the creation of a nuisance was harmful to adjacent neighbours more than it adversely affected those living far from the scene. It therefore was left to informal agreement between adjacent

co-residents the right to mutually restrict each other's property usage in such a way that urban development would not infringe on the privacy or property right of each other.

When such agreements were lacking or unenforced, litigation was required to redress the grievance. The prevalence of cases revolving around building heights and their threatened invasion of the visual privacy of a neighbour's interior court, or the number of cases of litigation over the obstruction of access to an individual dwelling by occupation of a common easement, testify to the manner in which neighbours exercised control over the development of their immediate vicinity.

Such special relationship between proximate neighbours, could be contrasted with Western Law as it derived from Roman precedents. In Western Law, one's rights over property are limited by regulations which apply equally, generally and in advance. One's responsibilities to close neighbours or persons occupying adjacent dwellings are usually no different from one's responsibilities to more distant co-residents in the city. Either one is permitted, or one is prevented from doing certain things with one's real property – building to a certain height, expanding into the street, covering one's lot with structure up to a certain percentage. These regulations are not usually contingent upon the attitudes of and acceptance by one's neighbours, which can be blocked by their opposition.

3.3.5. Property Division Among Inheritors

In Western property law, the dominant form of ownership is *Mulk* or freehold, and unless otherwise specified, such freehold entitles the owner to an indivisible "Bundle" of rights over the land, the minerals beneath the land, any structure built upon the surface and the air right over the land. Needless to

say, rights to *usufruct* were included in this bundle. The principle in Western Law that (each man's home is his castle) reflects the absolute quality of indivisible ownership. In marked contrast to the freehold tenure is rental tenure, which yields for a specified period, upon payment of rent, specific portions of property rights. Between these two forms of tenure are only a few (but growing number of) intermediary types which have developed quite recently.

In contrast Islamic Law recognises a wide range of partial property rights. Geographically, it permits a finer fragmentation of spatial rights:- air right, right to a single floor, or even a single room. Functionally, it recognises a variety of different kind of rights:- right to the *usufruct* "use but not sale of property", rights during one's lifetime which then revert to others. During the Ottoman Empire period, some laws were constituted to restrict the division of radiance into smaller parts, which were suitable for proper use, but the essence of the law was not affected, and people reach settlements in such cases.

3.4. Territoriality

Every living thing has a physical boundary that separates it from its external environment. Beginning with the bacteria and the simple cell, and ending with man, every organism has a detectable limit which marks where it begins and ends. A short distance up the phylogenetic scale, however, another, non-physical boundary appears that exists outside the physical one. This new boundary is harder to delimit than the first, but is just as real. We call this the "Organisms territory".²⁰ The act of laying claim to and defending a territory is termed territoriality. In man, it becomes highly elaborated, as well as being

²⁰E.T. Hall 1974

very greatly differentiated from culture to culture.

It is now widely accepted that links exist between spatial behaviour and certain mechanisms of social organisation in many organisms.²¹ Of particular importance in this connection is territoriality, which has been suggested as a key factor linking social behaviour and population dynamics in several vertebrate species.²² The main thesis of this part of the study is that for humans, territoriality serves as an important organiser of behaviour on several levels, and that human territoriality should not be treated primarily as a property reference phenomenon.

Edney suggests that a strictly defence-oriented definition of territorial behaviour seems inappropriate when examined in the context of human behaviour. He contends that human territoriality, more importantly, serves to organise behaviour at community, dyadic, and individual levels, and that its defence-related functions are of secondary importance.

There are many definitions of animal and human territorial behaviour, several of which were integrated by Altman²³, whose examination of these definitions suggested several themes. First, territory refers to objects, places, or geographical areas that can vary in size from small to large and can have any shape, such as toys, seats at a table, rooms, homes and nations. Second, most definitions include the idea of ownership or control over use of a place or object. Control can cover the range from others who have not been permitted entry or use to others who have been permitted in limited ways. Third, many definitions suggest that, occupants personalise places in some way – for

²¹ Ardrey, 1966; Layhaesen, 1965; Sommer, 1969.

²² Wynne Edwards, 1965

²³ Altman, (1975)

example, animals by secretions, excretions, and noises and human by use of symbols and artifacts such as fences, and signs. Fourth, various definitions suggest that territories can be controlled by individuals, small groups, or large groups. Fifth, some definitions suggest that occupants often resort to defence and protection of territories in the face of actual or potential invasion by others. Sixth, many definitions, especially those dealing with animal behaviour, refer to the functions of territories, such as mating, population control, rearing of young, and protection of resources.²⁴ If we pull together some of these ideas, human territoriality can be defined as including these features:

1. There is control and ownership of a place or object on a temporary or permanent basis.
2. The place or object may be small or large.
3. Ownership may be by person or group.
4. Territoriality can serve any of several functions, including social functions (status, identity, family, stability) and physical functions (child rearing, copulating, sleeping, privacy, food regulation, food storage).
5. Territories may occur when territorial boundaries are violated.

From this definitional analysis, it should be evident that territoriality is very complex. In fact,

rules.

I. Altman and M.M. Chemers, 1984, have mentioned that, there are three types of territories: primary, secondary, and public. This important distinction, refers to the idea that human territories, such as home, are primary territories and are extremely important to the well-being and lives of their occupants. Public territories, such as seats on a bus or places in line, are generally not very important: they do not occupy a central role in the lives of their users.

What concerns us there is the primary territory.

"Primary territories are owned and used exclusively by individuals or groups, are clearly identified as their by others, are controlled on a relatively permanent basis and are central to the day-to-day lives of the occupants".²⁵

Examples of primary territories are easy to specify: a person's bedroom, a family home, a family farm, a company's offices, a community's property, a nation's land. Each of these places is psychologically important to its occupants and is something with which they identify strongly and which they occupy on a relatively long-term basis. Furthermore, primary territories are usually under the complete and unambiguous control of their members. In the Sudanese society, one rarely enters someone's home without explicit permission, with the exception of relatives and friends, and the home is a place over which occupants generally have complete control against strangers.

Unexpected or uninvited intrusions into primary territories are a serious matter and can lead to strong defensive actions. For example, it is permissible and legal in the Islamic Law to protect one's property (home) against intruders, and it is permissible under world law to defend one's nation against undesired

²⁵Altman, 1975, p. 112

entry or invasion. Perhaps the protection of primary territories is allowed because such territories are so important to a person's or group's well-being and viability.

In this respect one should point to the debate currently held about territoriality in architecture, which argues that spatial design can only play an important role in society by virtue of there being a "Correspondence" between spatial zones and social identities, and the new proposal which argues that "Structured non-correspondence" can also play a positive social role, with quite different consequences for spatial design. To the extent that a system works on non-correspondence it functions more probabilistically.

With respect to the Sudanese society, one could argue that both systems could work, but with substantial differences between the two and time consuming in the second case, yet no 100% guarantee that it could work. The correspondence model is the dominant model in the Sudanese society, where we find homogeneous people (clan, tribal or regional) living together, although the authority does not encourage it, but it does not go against it. Since it works for the benefit of the community as a whole. With this model residents from the start will be able to cooperate with and help each other in building houses for those who could hardly afford to build their houses, because they are relatives or know each other, so they do not need time to get acquainted with the social milieu of the neighbourhood. This situation creates well controlled, utilized, guarded public places and streets. The non correspondence model was founded due to implementation of the modern planning system very recently; when people have been housed according to their occupation and income level, and regardless of their tribal or regional background. Under this system people from different tribes or regional backgrounds are brought together, they do not know each other and they do not need each other. In this sense the two basic ingredients (clan ties and daily needs), needed for a

socially well tied neighbourhood are missing. However by time, probably, the first or second generations will get married, thus social ties will be stronger. This process needs some time, but still there is no guarantee that social relation in the entire neighbourhood will improve due to few marriages between neighbours.

The concept of primary territory which is our main concern here, applies to individuals as well as to larger social units. In the Sudanese society a bedroom and many items in it could be shared by two or three brothers or sisters (age-group), thus the room and its items are primary territories over which the occupants have complete control.

Islam has divided responsibilities in the household between the two parents, the wife is the owner of the interior furnishings of her house, including decorations and utensils, whereas the husband is responsible for the outside walls and the house itself. In rural and nomadic areas where polygamy dominates, wives have control over their own quarters and the husband has control over the male quarters. This situation has been observed among the Fulani people of West Africa.²⁶ Similarly, in the homes and communities of Pueblo Indians, the woman controls and owns everything within the home, whereas the man owns the gardens and livestock.²⁷

3.5. Domestic Group Organisation

The term domestic group organisation of culture is widely used by cultural anthropologists,²⁸ to lump up many cultural aspects, such as kinship, marriages,

²⁶Prussin (1974)

²⁷Altman (1984)

²⁸Marvin Harris, 1983

family types, residence, dwelling space etc. In this study, the author has used it in the same way for the purpose of tackling these aspects as one unified cultural phenomenon, since they are intermingling and strongly related to each other.

The study of domestic life in hundreds of cultures all over the world has led anthropologists to conclude that two ideas of mental principles are involved in the organisation of domestic life everywhere.²⁹ The first of these is the idea of affinity, or of relationships through marriage. The second is the idea of descent, or parentage. People who are related to each other through descent or a combination of affinity and descent are relatives or kin. The domain of ideas constituted by the beliefs and expectations kin share about one another is called kinship.

3.5.1. The Structure of Kinship and Kinship Terminology

In many societies, kinship connections structure many areas of social life – from the kind of access an individual has to productive resources to the kind of political alliances formed between communities and larger territorial groups. In some societies, in fact, kinship connections have an important bearing on matters of life and death.

If kinship is important, there is still the question of which set of kin a person affiliates with and depends on. After all, if every single relative were counted as equally important, there would be an unmanageably large number of people in each person's network. Consequently, in most societies where kinship connections are important, rules allocate each person to a particular and definable set of kin.

²⁹Ibid

3.5.2. Rules of Descent:

The rules that connect individuals with particular sets of kin are because of known or presumed common ancestry. By the particular rule of descent operating in their society, individuals can know more or less immediately which set of kin to turn to for support and help.

There are only a few known Rules of Descent that affiliate individuals with different sets of kin.³⁰

A. Unilineal Descent:

1. Patrilineal Descent: (The most frequent rule), affiliates an individual with kin of both sexes related to him through men only.³¹ In Patrilineal systems the children in each generation belong to the kin group of their father; their father, in turn belongs to the group of his father and so on. Although a man's sons and daughters are all members of the same descent group, affiliation with that group is transmitted only by sons to their children.

2. Matrilineal Descent: affiliates an individual with kin related to him by her through women only.

Ambilineal Descent:

³⁰Fig: (1)

³¹Fig: (2)

Affiliates an individual with kin related to him or her through men or women. In other words, some people in the society affiliate with a group of kin through their fathers, others through their mothers.

B. Bilateral Kinship:

Many societies, including Western societies, do not have lineal descent groups, sets of kin who believe they descend from a common ancestor. They are therefore called bilateral (two-sided) societies. It refers to the fact that one's relatives on both mothers' and fathers' sides are generally equal in importance or (more usually) in unimportance. Kinship reckoning in bilateral societies does not refer to common descent, but rather in horizontal,³² moving outward from close to more distant relatives, rather than moving upward to common ancestors.

The distinctiveness of the bilateral systems of descent is that, aside from brothers and sisters, no two people belong to exactly the same kin group. The kindred contains close relatives spreading out on both the fathers' and mothers' sides, but the members of your kindred are affiliated only by way of their connection to you. Thus, the kindred is an ego-centred group of kin. It is the ego-centred nature of the kindred that makes it difficult for it to act as a permanent or persistent group. The kindred usually has no name, no common purpose, and only temporary meetings centred around ego. Furthermore, since everyone belongs to many different and overlapping kindreds, the society is not divided into clear-cut groups.

³²Fig.(3)

It should be mentioned that Figs: (3) and (4) do not represent the Sudanese case, on the contrary, they mainly represent the Western system, and have been illustrated here for easy comparison with the Sudanese system.

What concerns us here is the patrilineal descent group which is representing Sudanese Descent Group. However, although unilineal (Patrilineal and Matrilineal) rules of descent exclude certain types of relatives from membership in one's kin group, the excluded relatives are not necessarily ignored or forgotten. Indeed, in the Sudanese case, they may be entrusted with important responsibilities, such as active contribution in all families' affairs, like marriage, funerals etc. Thus, this exclusion is valid only in terms of descent, crucial matters such as politics, confrontation and rights, but emotionally they have the same chance as that of the patrilineal descent. This fact of belonging to a specific group is important if kin groups are to act as separate or non-overlapping units. It is difficult for people to act together unless they know exactly who should get together. And it is easier for individuals to act together as a group if each one belongs to only one such group or line.

Marriage within the lineages is preferred in the Sudanese society. But in general, the incest taboo in Islam is limited to those known universally "mother, sister, aunts from both sides etc". Members of a person's lineage are often required to side with him in any quarrel or lawsuit, to help him or her get established economically, to contribute to marriage cost, to help poor relatives, and visit relatives generally (*Islam*) and to support relatives in life crisis. Descent group members may also support one another in such enterprises as cleaning farmland, harvesting the crops, helping building a house (*nafeeh*), providing food and other things for feasts and helping in ceremonial occasions, such as birth, naming, circumcision, marriage etc.

3.5.3. Kinship Terminology

Countless field studies by anthropologists have revealed that societies differ markedly in how they group or distinguish relatives under the same or different terms. The kinship terminology may reflect the kind of family prevailing in a society, its rule of residence and its rule of descent, and other aspects of social organisation. The kin terms may also give clues to prior features of the social system, as many anthropologists believe, the kin terms of a society are very resistant to change. The major systems of kinship terminology are the Omaha System, the Crow System, the Iroquois System, the Hawaiian System, the Eskimo System³³ and the Sudanese System.³⁴

3.5.4. The Sudanese System

Unlike other systems, a Sudanese System of terminology usually does not lump any relatives in the parents' and ego generations. That is, a Sudanese System is usually a descriptive system in which a different term is used to refer to each of the relatives shown in Fig: 5. And because the Sudanese society has a patrilineal descent, it distinguishes between blood kin and affinal kin (kin by marriage) and even within the blood kin there are some subtle differences, e.g., some people within the kin have more privileges than others, in terms of right to support in crisis, right of marriage, right of residence etc.

The Sudanese kinship is associated with relatively great political complexity, and social life. Generally the system reflects the need to make fine distinctions among members of kinship, who have varying opportunities and privileges in

³³Fig: (4)

³⁴Carol R., Ember/Melvin Ember 1981.

approximately all aspects of life. There is a Sudanese saying which manifests the role of the kinship: "My brother and I against my cousin, and my cousin and I against the stranger".

Regional, tribal and descent relationships have created a range of requisite and entitled rights for each group, in terms of residence, as well as economic and non-material help. These range of rights, together with climatical and economic factors, have a considerable impact on the house, and the general layout of most Sudanese cities, in terms of spaces and horizontal expansion. For example, the cultural norms, with regards hospitality towards relatives, to which people have to conform in terms of space (Yards). Another example related to city planning the Khartoum sewer system, which was designed in the late fifties, based on five persons per household. Immediately after completion, the system had flooded, because the number of persons per household has been wrongly estimated in reality the average household number is between (6 - 10). So spatial consideration, should be given to allow for the accommodation of the kinship group, both in houses' design and the planning of the urban infrastructure.

Fig: (1). Rules of Descent
(Borrowed from Amber, Carol R., 1981)

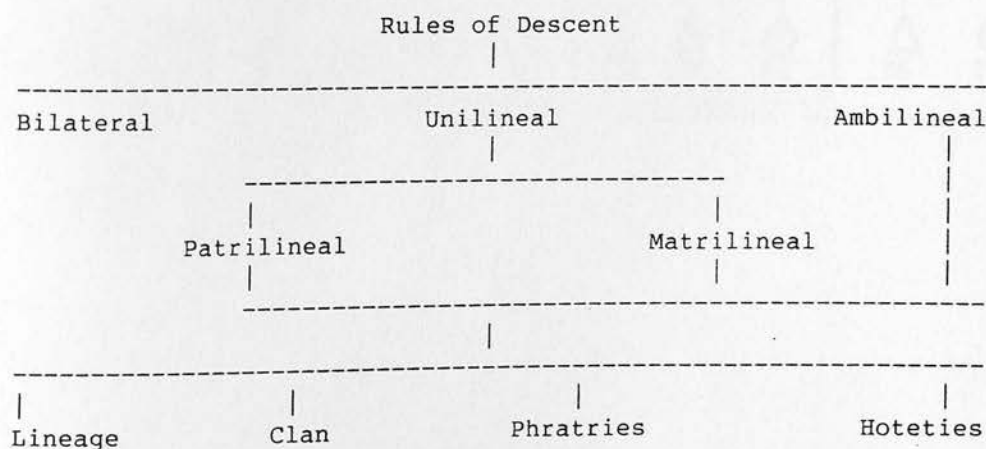


Fig: (2). Patrilineal Descent
(Borrowed from Ember, Carol, R., 1981)

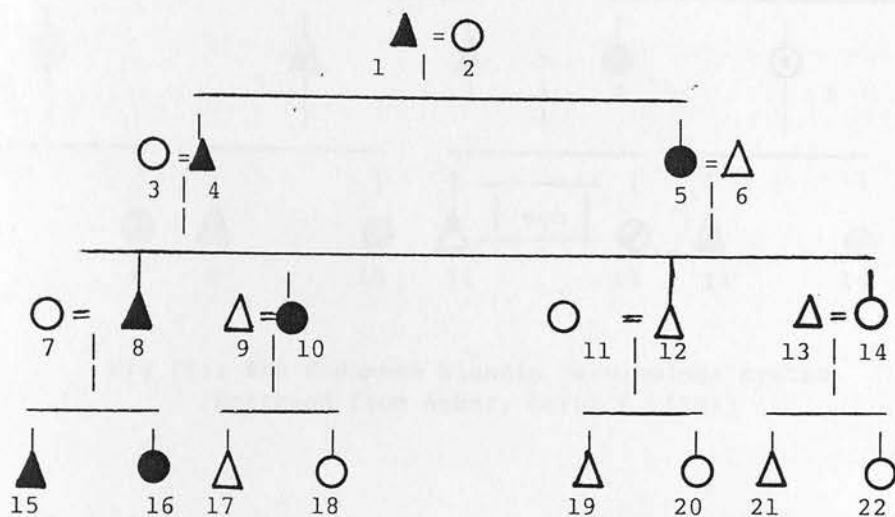


Fig: (3) Bilateral Kinship
(Borrowed from Ember, Carol R. 1981)

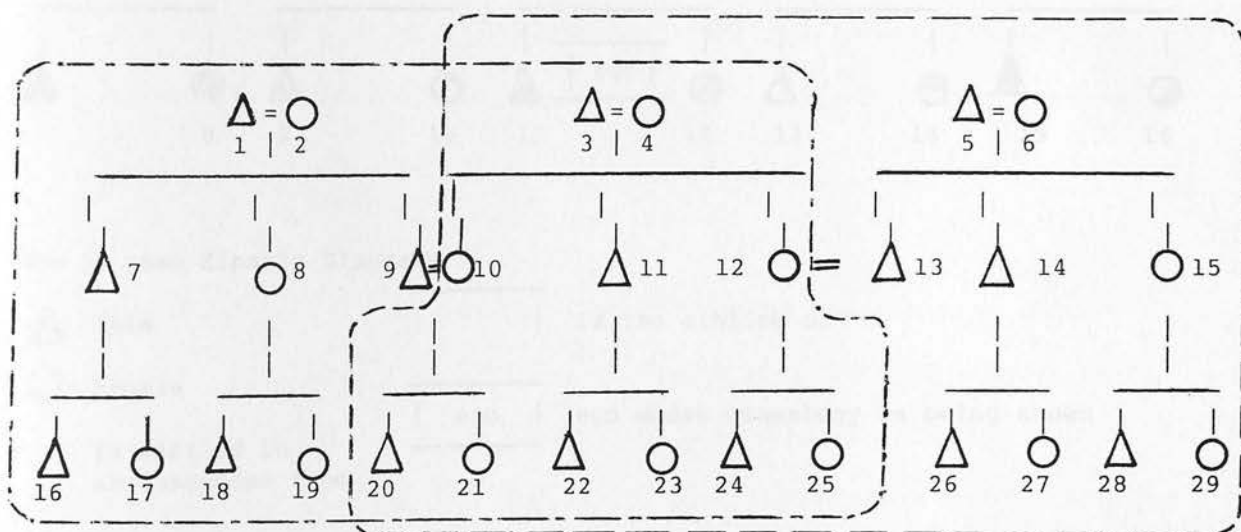


Fig (4): Eskimo Kinship Terminology system
(Borrowed from Ember, Carol R, 1981)

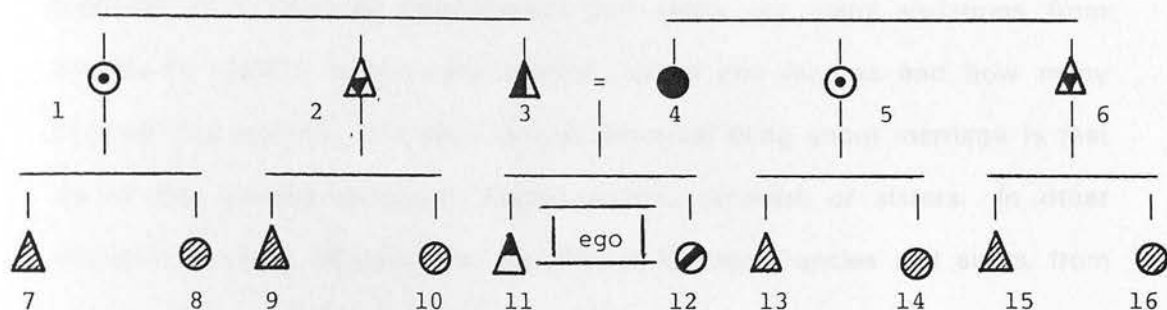
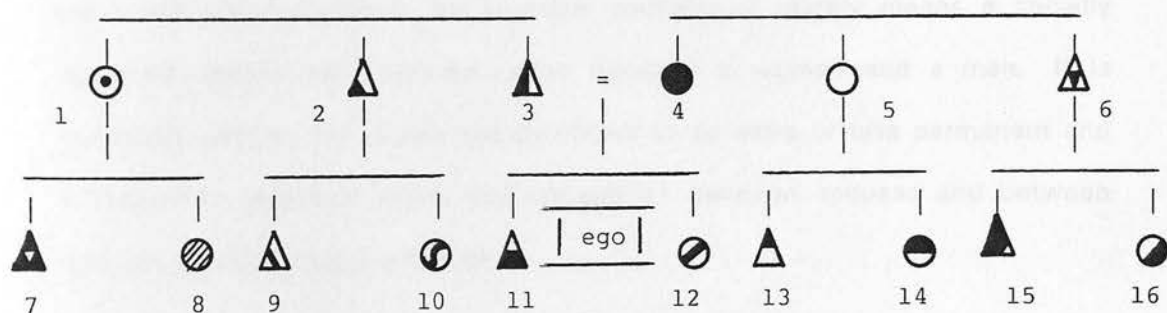


Fig (5): The Sudanese Kinship Terminology system
(Borrowed from Amber, Carol R. 1981)



How to read Kinship Diagrams



Male



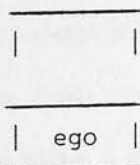
Female

=

is married to

|

is descended from



is the sibling of

ego whose genealogy is being shown

3.5.5. Marriage – Universality of Marriage

Marriage is a universal phenomenon, but there are many variations from society to society in how one marries, whom one marries and how many persons one marries. The only cultural universal thing about marriage is that no society permits people to marry parents, brothers or sisters. In other societies, such as Muslim, it is not allowed to marry uncles and aunts, from either parent's side, sister's and brother's daughters.

Marriage universality does not mean to imply that couples everywhere must get marriage certificates or "Gaceama" or have wedding ceremonies, as is the case with some societies, but in other societies it merely means a socially approved sexual and economic union between a woman and a man. It is presumed both by the couple and by others to be more or less permanent and it subsumes reciprocal rights and obligations between spouses and between spouses and their future children.

3.5.6. Types of Marriage

Universally there are four possible forms of marriage.³⁵ Marriages in western societies involve just one man and one woman at a time (monogamy), but most societies world-wide allow a man to be married to more than one woman at the same time (polygyny). Polygyny's mirror image, one woman being married to more than one man at the same time (polyandry) is practised in very few societies. Polygyny and polyandry are the two types of polygamy, or plural marriage. Group marriage, in which more than one man is married to more than one woman at the same time, sometimes occurs but is not

³⁵Fig: (6)

generally customary in any known society.

(Fig: 6) Four Possible Forms of Marriage
(Borrowed from Ember, Carol R., 1981)

Form of Marriage		Males	Females
Polygamy (Monogamy	X	= 0
	Polygyny	X	= 0+0+ ...
	Polyandry	X+X+...	= 0
	Group Marriage	X+X+...	= 0+0+...

3.5.7. The Sudanese Case

Islam has allowed a man to marry up to four wives, if he has got economic, physiological and justice abilities, otherwise he must stick to one, which means that both monogamy and polygyny forms of marriage are practised in the Sudan. Also, Islam has advised people to choose their future wives according to some criteria, such as observing the teachings of Islam plus the personal and creative criteria. So, in the light of these criteria, there is an element of personal judgement in terms of knowledge of the family of the future wife or husband, as well as her or his personal behaviour, which is difficult to know without the help of one's own relatives, who play a very important role in such types of arranged marriage. For these simple reasons we find that most of the Sudanese people prefer to marry from the following groups; patrilineal kinship, lineage, clan, tribe, region or even neighbours and friends. Marriage within kinship is concerned mainly with cross cousins as well as parallel cousins, which is the most preferred, and has been supported by the Sudanese saying "if you missed to marry your cousin, go for your cousin's sibling," which is not common practice in urban areas.

Since the Sudanese people do prefer marriage within their surrounding field of relationships, whether that be a kinship, tribe, friend etc., there is an element of

movement from place to place, from town to town, from region to region, in order to celebrate the occasion. Bearing in mind the strong social relationship in terms of kinship, economic and mutual, as well as family support etc., the groom is usually accompanied by some relatives and friends on his journey to the bride's parents house. The number of those who should accompany him varies from hundred to tens of them, depending on the economic situation of the family, the distance to be covered, the preparations made by the bride's family for their guests, as well as the personal circumstances. However, a minimum of twenty persons of both sexes is hardly accepted, which does not reflect the groom's family economic, social and clannish powers. This social obligation has put some economic and spatial burdens on both families (bride's family and groom's family). Add to this the Islamic teaching regarding the publicising of marriage, which many people interpret as having to invite all the people known to both families as groups and individuals.

Islam prefers that the material price of the bride should be a very small amount of money, which is equivalent to one and a half sterling pounds, but without exception, all the Sudanese exaggerate the bride's price, and some pay tens of thousands of Sudanese pounds to show their wealth. All this money will be spent on the ceremonies and serving the groom's guests. Over and above that, the bride's family spend a similar amount of money to show their wealth too. In case the groom and his companions are coming from far places, they will have a generous welcome ceremoniously as well as spatially, in terms of separate space for their rest, besides food and entertainment etc. This situation in some regional areas will be continuing for weeks, in others it lasts two or three days, depending on many factors, such as the proximity of the groom's house, the economic situation of both families, the space available within the bride's parents' house and their neighbours. In such circumstances people do resort to their neighbours for help in allocating some places for the

large number of guests, for rest, sleeping and the ceremonial rituals. In some cases, where there are no spaces available in neighbours' houses and the neighbourhood, generally, people fence the streets for such functions, without caring about the inconvenience caused to passers-by, in cars or pedestrians, for some days.

3.5.8. Marital Residence

Only 5% of all societies known to anthropologists are familiar with neolocal (new place), the rest (95%) have other forms and patterns of residence for a newly married couple.

Since children are required to marry outside the nuclear family (due to incest taboo), and since couples in almost all societies live together after they marry (with a few exceptions), it is not possible for an entire society to practise a system in which all married offspring reside with their own parents, so some children have to leave home when married. But which children remain at home and which reside elsewhere? There are four patterns occurring with any sizeable frequency universally:

1. Patrilocal Residence - the son stays and the daughter leaves so that the married couple lives with or near the husband's parents (67% of all societies):
2. Matrilocal Residence - the daughter stays and the son leaves, so that the married couple lives with or near the wife's parents (15% of all societies):
3. Bilocal Residence - either the son or the daughter leaves, so that the married couple lives with or near either the husband's or the wife's parents (7% of all societies):

4. Avunculocal Residence – both son and daughter normally leave, but the son and his wife settle with or near his mother's brother (4% of all societies);
5. Neolocal Residence – both son and daughter leave, married couple live apart from the relatives of their spouse (5% of all societies).

The Sudanese case is a matrilocal residence in the short term, in a sense that immediately after marriage the couple could stay with the wife's parents. In order that the wife learns from her mother the art of housekeeping, such as food preparation, proper handling of daily household problems and issues and to get help from female relatives in the household. This situation may persist for some time, especially if the wife's parents have got another girl. But after a time, the couple will be leaving and will stay with the husband's parents, especially after the first or second child, or if the wife's younger brother had married and wants to bring his wife to his parents' house. Because the Sudanese society has a patrilineal kinship, the son must bring his wife and offspring to grow in their patrilineal kinship and clan, for social as well as economic and responsibility reasons. In short, marriage in the Sudanese society is not a mere marriage between two persons or two families, but in fact it could be a link between two clans or two tribes.

3.5.9. The Family

The family is a social unit, consisting minimally of a married couple and their children. Families as anthropologists define them, are as nearly universal as marriage. The members of a family (particularly the parents and their young children) usually live in a common household and acknowledge certain reciprocal rights and obligations, especially with regard to economic activity.

In a lifetime a person generally belongs to at least one family – a family of orientation – the one he or she is born into. Later, upon marrying, a person forms a new family – a family of procreation.

The family provides a learning environment for children. While no animal is able to care for itself at birth, a human is exceptional in that he or she is unable to do so for many years afterwards. Since biologically, humans mature late, they have few if any inborn or instinctive responses to simplify adjustment to their surroundings, and they have to learn a repertoire of beliefs and habits (which are mostly cultural) to become functioning adults in society. A family cares for and protects children while they acquire the cultural behaviour, beliefs, and values necessary for their own, and their society's survival.³⁶

3.5.10. The extended Family

Though people in the west are accustomed to the family consisting of a married couple and their young children (called the nuclear family), this is not the most typical family arrangement. Societies that practice polygyny (such as the Sudanese case) or polyandry will have somewhat larger family units. But most societies have families that go beyond the single monogamous, polygynous, or polyandrous family. The extended family is the prevailing form in more than half the societies known to anthropology.³⁷ It consists of two or more monogamous, polygynous, or polyandrous families linked by a blood tie. Most commonly in the extended family, a married couple and one or more of the married children live in the same house or household. The constituent nuclear families are linked through the parent-child tie. However, extended

³⁶Ember and Ember 1981

³⁷Coult and Habenstein 1965

family is sometimes composed of families linked through a sibling tie. For example, such a family may consist of two married brothers, their wives and their children. Extended families may be quite large, containing many nuclear families and including three generations.

Under polygyny, (the Sudanese system), for example, domestic tasks – nursing, grooming, cleaning, fetching water, cooking, and so on – frequently cannot be satisfactorily performed by a single wife. In polygynous societies, one of the main motivations for marrying a second wife is to spread the workload and increase domestic output.

As have been mentioned before, both extended and nuclear families have been found in the Sudanese society according to the Islamic Law.

3.5.11. The Sudanese Extended Family Life

In the Sudanese Society, which composed of both extended and nuclear families, marriage does not bring as pronounced a change in life style as it does in western nuclear family culture, where the couple moves to a new residence and forms a new, and basically independent, family unit. In the Sudanese case, the newlyweds are assimilated into an existing family unit. Margaret Mead describes a similar situation in Samoa.³⁸

The young couple in the Sudanese extended families, as in other typical societies, generally has little decision-making power over the governing of the household. Often, the responsibility of running the household rests with the senior male. The new family usually contributes to the cost of the household subsistence and is allowed to accumulate its own property and become

³⁸Margaret Mead, 1928, pp. 134 - 35

independent gradually.

Such extended family is thus more likely to perpetuate itself as a social unit than the independent nuclear family. In contrast to the independent nuclear family, which by definition disintegrates with the death of the senior members (the parents), the extended family is always adding junior families (monogamous and/or polygynous) whose members eventually become the senior members when their elders die.

In most Sudanese extended families, husbands usually have their own quarters where the senior member (father) sleeps apart from his wives, and males take their meals at an exclusive men's mess.

The layout pattern of a northern Sudanese nomadic tribe is arranged according to age on both sides of the senior members house. On the left are the wife's houses, the closest is the first wife, then the second and so on. On the right of the senior member (father), is the house of his brother. When his elder son gets married, he will take his uncle's place, and his uncle will move further, then again the uncle will give up his second place for the second son, and so on, until eventually his own son starts to get married, then the uncle with his own extended family will form a typical layout. The whole system of the layout is in the form of progression based on age. This system of layout reflects the society patrilineal descent system, which has only temporary provision of space for married daughters, who have to move to their husbands' patrilineal group.

Clearly the extended family has a profound impact on the arrangement of the extended family house, the space provided, future addition of extra rooms, and the shifting of residences (rooms) among the nuclear families of the extended family.

Part (2)

CHAPTER 4

RESEARCH APPROACH

4.1. Critique to the existing planning approaches

Laporte,¹ discussing housing in Puerto Rico, comments on the difficulties created by this gap in communication between those who encode and those who decode – the designer and the user. Joerges make the same point.² This is partly the case in our current study. Most city planning has either been done by foreigners or entrusted to them.

It would follow that any approach based solely on economic criteria judged on western values, scale, technology, materials, services, health and climate would be inadequate. Yet most approaches to the design of the physical environment in underdeveloped countries are based precisely on these criteria.

Decisions are thus taken on the wrong grounds, neglecting psychological and socio-cultural variables. For example Michelson³ points out that the life style and image of the users are much more important than economics and designing for low income families, while Rainwater⁴ similarly argues for a whole new approach to designing for low income families. The key to deciding how to build seems to be an appreciation of socio-cultural variables.⁵

¹Laporte, Roys, B. (1969) "Family Adaptation of Relocated Slum in Puerto Rico", *Ekistics*, Vol. 27, No. 158 (Jan.), pp. 56-59.

²Joerges, B. (1969), "Communication and Change at the Local Level". *Ekistics*, Vol. 27, No. 158 (Jan.) pp. 60-64.

³Michelson, William (1966) "An Empirical Analysis of Urban Space Preference", *AIP Journal*, Vol. 32, No.6 (Nov.) pp. 355-360.

⁴Rainwater, Lee. (1966) "Fear and House - As Haven in the Lower Class", *AIP Journal*, Vol. 32, No. 1 (Jan.) pp. 23-31.

⁵Rapoport, Amos. (1973) "The Ecology of Housing; *Ecologist*", Vol. 3, No. 1 (Jan.)

The history of urban planning is a new phenomenon, and is about one hundred years old in the Sudan. Before that people were living in small religious and tribal communities, as have been mentioned in Chapter (2). The growth of these urban centres was not a natural one, but was for commercial and administrative purposes. First by the Turks and later by the Anglo-Egyptian administration. Apparently from the start no consideration had been given to the indigenous people, socially and physically. Since all the processes of planning and building had been tackled by foreigners, who knew little about the Sudanese indigenous culture. This period had witnessed the borrowing of many environmental, technological and conceptual design ideas from Europe and Asia. The concrete manifestation of this process of borrowing is the spatial specialisation in the house, i.e., sitting, dining and living rooms, which proved to be poorly utilised in the Sudanese context.

When the new urban centres flourished and job opportunities created, those centres acted as magnets in attracting people from rural areas. Gradually the urban centres grew larger and larger, as has been mentioned before. Consequently, their population increased to limits that cannot be ignored. This new situation had called for an urgent demand for new housing, to cope with the population rush. Here the authority instead of encouraging the use of local building materials and employing local labourers, it imported both. Despite the fact that the majority of people cannot afford either imported building materials or skilled labourers even to day. On top of that it changed the traditional method of construction.

During the Mahadist period (1885 - 1889), although there was a huge mobilisation of population from rural to urban areas for the sake of Jihad (Holy War), there was no housing problems because people went back to the traditional building materials, construction techniques and the driving force of the general cultural environment, which anyone can afford.

Later on the condominium (Anglo-Egyptian) administration established many regional centres well connected to boost its economic situation, so as to supply the European's factories with raw materials. This process demanded well trained staff, who in turn needed housing. Since most of them were subjects of the condominium nations, very high spatial standard and modernity of housing had been built. This was the start of creating neighbourhoods for the rulers and elites, such as the British neighbourhood, etc. The large spatial standard together with the concept of the bungalow were initially developed in a different cultural context, namely in India, and eventually the idea was implemented in the Sudan.

Generally, the criteria of planning and housing instead of being based on socio-cultural, religious and economic aspects of the indigenous people, have been shifted to European ones. This approach has increased the dependence of the building industry on European building materials and design ideas. The whole process had on one hand boomed the planning and building industry and on the other boosted the huge role of the public sector in the process. Later on this process had proved to be unpopular and impractical due to the poor economy.

The implementation of (the legislation of division of housing land), classification, in 1906, divided the population into classes based on economic situation. This segregation was not thinkable before. Its main implication on the society are:

1. It dispersed members of the same social groups, i.e., clan, family, etc., who fall within different income groups.
2. It diminished the extended family, and created numerous nuclear families, who in turn demanded separate housing plots, thus aggravated the existing housing problems.

3. It allocated the central locations to the high income class, leaving the low income population occupying the peripheries of the towns.
4. It provided the high income groups with large space standards, open spaces, and proper facilities. Leaving the low income to live at the edge of modernity.
5. The grid planning pattern and the classification system had mainly political motives.

For more explanation of these implications please refer to Chapters (2) and (9).

6. The allocation of plots is not based on family size and needs, for instance a nuclear family of four persons is given the same plot area (300 m^2), as an extended family of twelve persons in the same third class area.

Another policy measure which has its imprints in the Sudanese housing policy up to date, was the decision to finance the initial infrastructure (i.e., planning the site, water supply, electricity, roads, etc), of new housing schemes on revenues from open auctions of the land allocated for the same purpose. This means that 15% of the total population should finance such schemes. This system has created or contributed to the following problems:

1. It has worsened the housing problem in urban areas, because rented accommodation in such circumstances is mainly controlled by the rich.
2. In some cases, where no land is available for auction, the government has to step in and finance the infrastructure of

such schemes, which is beyond the capacity. Thus it happened in many cases people built their houses and awaiting the government to fulfil its promises, but in vain. This has led to diminishing the role of the government.

3. For the above mentioned reason, many new schemes have been delayed for years and years, awaiting the financing of the infrastructures.

One of the serious problems facing Greater Khartoum after independence, is the centralisation of the governmental departments and industries in Khartoum. This in turn has attracted immigration towards the capital. This sudden change from rural to urban lives followed by inadequate and shortage of housing has boosted the squatter settlements problems around Greater Khartoum.

To encounter these problems, the consequent governments have taken some measures, such as new laws to bind renting accommodation, allocating plots on open and closed auctions, spreading the mortgage system to civil servants and the public, and made some experiments in low cost housing. All these measures are proved to be unpopular, simply because their social base is wrong. Since no consideration has been given to socio-cultural aspects, ie., family size, kins, sex segregation, ceremonies etc., thus the out-come is disastrous.

However the planning policies implemented in the Khartoum area for the last hundred years and up to date, on top of their incongruence to people socio-cultural life, have caused or contributed to the following environmental problems:

1. In any given housing scheme, the public facilities formed 35%, and roads 20% of the total area allocated to the

scheme. These percentages proved to be uneconomic, poorly utilised, anti-social, and causing climatical problems in terms of radiation and direct sun rays. In most cases parts of some roads are used for dumping rubbish, and areas allocated for public facilities have been reallocated for small private industries.

2. Although wider roads have been allocated, no proper open spaces have been provided for social and communal activities.
3. The average household size and rate of occupancy from survey results indicated clearly the wide gap between upper and lower classes, thus the injustices for low income and extended families. This shows the deficiencies in the basic human needs in third class areas.
4. The percentage of the gross national income allocated for housing infrastructure is below the United Nation proposal.

Finally in conclusion of this critique, an understanding of the relationship between the physical environment and social interaction is important to environmental designers concerned with the creation of a meaningful and coherent physical environment for the promotion of human growth and development.

4.2. Research Issues

4.2.1. Assumptions

The main assumptions upon which the entire research has relied is, that the Northern Sudanese people are more or less culturally homogeneous, therefore

comparison can be made between the four study areas, Khartoum, Umdorman, Khartoum North, and Tuti, (For more details, see Chapter 2).

The second assumption is that this Northern Sudanese culture, which amounts to their habits, ceremonies, religion practices, marriage, family, division of sexes, etc., in short their daily life and social needs, influence the type of built environment their choices produce and vice versa. Consequently an imported environment could adversely affect the pattern of their daily life and such behaviour. This is the central assumption which the study drives to evaluate the following research issues.

4.2.2. Research Issues (General)

These research issues form the main body of the study, and refer to questions raised in Chapter 1. In this chapter, they are treated generally. Specific detailed behaviour will be presented in Chapter 5 by means of an analysis of the questionnaire, and discussed in Chapters 6 – 13. The general substance of these chapters contains the following issues:

Research Issue (1)

Do residents of the four study areas, (Khartoum, Umdorman, Khartoum North, and Tuti) exhibit the same behaviour, but in similar or different settings, and what are the consequences of that?

Research Issue (2)

How do similar patterns of neighbourhoods in different cities, generate typical behaviour?

Research Issue (3)

Do socio-economic factors match with type of accommodation an individual

has, which in turn influences some behaviour?

Research Issue (4)

Because of cultural transfusion worldwide, are there contradictions between environment-related behaviour and the local indigenous cultural-based behaviour, and what are the implications of that on the built environment?

Research Issue (5)

Do regional background and length of residence in an urban area influence people's perception of open spaces and public parks?

Research Issue (6)

Are residents in Khartoum area satisfied with their existing neighbourhood, and if so, for what reasons?

Research Issue (7)

Does the state of crowded houses in relation to families' sizes, have an impact on people's visits to parks, relatives, leisure time and the use of streets and near open spaces?

Research Issue (8)

Is there any environmental constraint on some age and sex groups, (females and elderly)?

4.2.3. Towns and neighbourhoods

As has been mentioned before (Chapter 2), the study covers the four areas composing Greater Khartoum. Each of these areas contains a number of neighbourhoods (1st, 2nd and 3rd classes), except Tuti, which is a third class

area.

Although each town is mainly dominated by a specific planning pattern, different from other towns, some neighbourhoods in the four areas are typical to each other planning wise. Based on this fact, any relation involving neighbourhoods, will be dealt with according to such similarity in the form of neighbourhoods' groups, and not in terms of towns. Furthermore a discussion of such groups will be conducted in the subsequent chapter, ie.. (Chapter 2).

4.3. The Research Methodology

Increasing interaction between architecture, planning and the social sciences has, in recent years, resulted in a rapidly growing literature in the behavioural aspects of environment. Though valuable knowledge has accumulated on, for example, environmental perception and the social use of space.⁶ Empirical or theoretical studies of the social, and more particularly, cultural variables in the relation of behaviour to environment are still hard to find.⁷

The major exception is the work of Rapoport, whose *House Form and Culture* (1969) remains, with the work of E.T. Hall,⁸ the standard introduction to the subject. For other studies of cultural factors in the perception and use of space and on the quality of the modified environment, one must turn to the relatively small place it occupies in standard anthropological monographs, such as those of Evans-Pritchard (1956), Levi Strauss (1963), Herskovitz (1966), Hallowell (1967) and others whose work is generally focused on so-called 'pre-literate' or non-western cultures.⁹

The main objective of this study, is to isolate the cultural variables which help to account for the Northern Sudanese's cities specifically and the Muslim's cities, generally, in terms of physical-spatial forms. The approach to the problem should be a detailed urban cultural study which includes comparative field studies between the four study areas, as well as a survey of the Sudanese cultural institutions, which are relevant directly or indirectly to the built environment. Thus the possibility of proposing design recommendations for

⁶Buttimer, 1969; Goodey, 1971, 1972; Craik, 1973

⁷A.D. King, 1976

⁸Hall, E.T., 1959; 1966

⁹Ibid

Northern Sudan.

Although the four study areas are different historically, functionally and structurally,¹⁰ nevertheless the residents are culturally homogeneous, despite few regional variations evident in the Northern Sudan. It is these crucial differences between the four study areas which will be utilised in the analysis of the urban forms. Since the main assumption of the study is that the respondents are culturally homogeneous. It is possible through a carefully designed questionnaire and systematic observation to subtract those elements of the built environment which probably have created or caused the differences of human behaviour, in the four study areas. The outcome of the behavioural differences will of course furnish us with the advantages and disadvantages of the different layouts currently in use when matched with the overall Sudanese cultural-based behaviour, influenced by the cultural institutions system of the society. An overall picture of some good elements of each design pattern could be drawn. This in turn allows for the production of design recommendations, since the reality of the world today, is one of borrowing and giving, through the diffusion of cultural elements.

4.3.1. Observation Technique

An observational technique was borrowed from the work of Professor Jan Gehl of the Royal Academy, Copenhagen. He has developed this technique in many of his works and used it to interpret the psychological context.

This direct observation, resulted in limited lengths of 80 to 100 meters of the streets to be studied, being designated as a base sample which enabled the study and observation of specific behaviour to be allocated and controlled.

¹⁰Chapter(2)

The observation procedure requires the gathering of both physical and activity information for each neighbourhood to be studied. The preparatory work, required for collecting the two types of information needed was as follows:

A. Physical Information

- i. Location plan, area plan and block plan.
- ii. A plan of the street and forecourts, 1:400 or 1:500.
- iii. A section through a typical part of the street, 1:400 or 1:500.
- iv. Photographs describing the houses and street shape.

Activity Information

- i. A minute to minute diary, describing all events occurring on the street or visible from it, stating time, duration, place of occurrence, type of activity and persons participating, sex and age-groups.¹¹
- ii. A record of exactly where people were and what they were doing, to be taken at fixed times and plotted on a plan of the street. Thus long duration activities, in terms of time of occurrence and place of positioning, could be plotted.

¹¹ Appendices (1); (2) and (3)

For the purposes of distinguishing the most effective activities and fruitful analysis, activities will be classified as follows:-

a. In transit:- walking, standing, running.

On the job:- postman, deliveryman, hawker, etc. bicycle riding, etc. These activities have a duration of a minute or less and will be neglected in the detailed analysis. However, they may cast light on the degree of the street important and business.

b. Housework:- includes cleaning, sweeping, automobile work, etc.

c. Recreation:- gardening, playing, talking, chatting, sitting, entertaining, looking out of the window or balcony and the use of street furniture if any. What is of concern here are those activities which have a duration of more than a minute.

d. Social activities:- weddings, circumcisions and naming ceremonies.

e. Religious activities:- praying, fast breaking and reading the Qoran.

The work has been carried out in three separate stages:

- i. the dimension of the street and its surrounding houses;
- ii. the observation work; and
- iii. the informal interviews.

iii. To ensure the respondents' behaviour has not been affected, the interviews had been conducted on some days, after the observation. A total of twenty-two streets in the four study areas had been studied. The author had the advantage of five newly graduated architects helping in carrying out the work in its three stages. The work started in April 1984 and finished six months later.

4.3.2. Questionnaire

The format of the questionnaire includes the following information:

- 1. Physical information of the existing individual houses, neighbourhoods and cities.
- 2. Personal information of respondents, i.e. sex, education, occupation, age, family type, type of accommodation, length of residences, regional background, and religion.
- 3. Uses of both men's and women's yards.
- 4. Activities in general, i.e. children playing, family occasions.

5. Leisure time and recreation.

6. Settings and recreational facilities required.

The questionnaire was designed to isolate those spatial qualities, which affect behaviour, whether in private, semi-private or public areas. Also it deals with psychological behaviour in terms of recreation and entertainment, such as social visits, visits to parks and other leisure pursuits.¹²

The interviews were mainly conducted in an informal manner, with respondents from a pre-determined area. On top of this an observational technique has been utilised. With the use of the technique, the evidence from the questionnaire could be checked and evaluated. The importance of the physical forms and the main physical features within each study area, which might affect the residents' behaviour, could be correlated with the findings of the questionnaire.

The two techniques mentioned above, will enable an understanding of the nature and type of behaviour occurring in front yards. This for one reason or another, is often extended and integrated into the semi-public or public side of the built environment. It also provides greater understanding of activities that are deemed to be private and carried on in the interior courtyard or near the dwelling.

In this type of study, one needs to know different types of environmental features which could influence behaviour or be affected by human behaviour. The following criteria have influenced the selection of the streets to be studied in all study areas:- a) the urban pattern; b) the classification of the area into first, second and third classes, c) physical features, such as trees, canopies,

¹²Appendix (4)

sheds etc; d) number of storeys, density and the street's width; e) the layout and structure, traffic situation, topography, vegetation and type of boundary walls. It is hoped that, being of Sudanese culture, it will help considerably throughout the research stages to tackle each problem effectively, with one's knowledge of the people, their culture, values and customs.

To have a wider spectrum of comparison between the four study areas, a minimum of one first class and one second class area, and a number of third class areas have been studied in each city.¹³ A minimum of six neighbourhoods will be studied in each city, except Tuti, which is actually a single third class neighbourhood. There are limited numbers of first and second class areas which are more or less physically similar and planned in a modern manner. However, third class areas have diversity of planning patterns, e.g., indigenous (Tuti), replanned indigenous (Bait el Mal), low cost housing, (Eldeium), and proper grid-iron, (Elthorah) patterns. This represents the living area of more than ninety percent of the total population. Before deciding which streets were to be studied within a specific neighbourhood, an exploratory survey was conducted.

4.3.3. The Cultural Institutions:

The study of socio-cultural factors and their impact in the utilisation of space and the modification of the built environment, have both theoretical and practical importance.

At the most fundamental level, members of all human societies, irrespective of culture or location, share common needs:- food, shelter, reproduction, socialisation, security, etc. How the members of the society provide for these

¹³ Appendices (5 - 26)

needs however, and modify their built environments to obtain them, is a process mediated by culture.¹⁴ Thus the study of the provision for shelter for example, both synchronically, across cultures distributed in space, and diachronically through time, has value not only in delineating the characteristics of any one particular culture, but by identifying those attributes common to them all, giving us an insight into those basic properties which are unique to man as a human and social being.¹⁵

For some, the most convincing example of the practical value of such studies, would be drawn from an area of concern to those architects, planners and policy makers whose primary problem is the design of housing for the rapidly expanding urban areas of the so called "Developing World". Here, as elsewhere, design solutions must be congruent with the value system and the culture of the community being housed. According to a United Nations' report stating that in many cases minimum standards, including spatial specifications, "Emanating from a by-gone colonial era and representing an entirely different cultural and climatical background are relevant and even promoted". Such problems, it has been suggested, call for extended studies of social and cultural factors in the analysis of house and community design, to ensure that design solutions have the optimum degree of acceptability.¹⁶ This part of the methodology is mainly concerned with the study of some Sudanese cultural institutions which could directly or indirectly have some impact on the physical form of the city; because studying all cultural traits could be of little help to our current study.

¹⁴Anthony D. King 1976

¹⁵King, 1976

¹⁶United Nations, 1971

In order to utilise this approach, a thorough survey of anthropological literature has been covered, to base the study on a proper theoretical ground.

Generally there are two broad classifications of subject matter in anthropology:- physical, biological anthropology and cultural anthropology. Cultural anthropology is divided into three major sub-fields:- archaeology, linguistics and enthology. Enthology is the study of recent cultures and is often referred to by its parent name, cultural anthropology or social anthropology. One of the most influential and controversial theories of cultural anthropology is the viewpoint of Claude- Levi-Strauss, the leading proponent of structuralism. Essentially Levi-Strauss sees culture as it is expressed in art, ritual and the pattern of daily life, as surface representation of the underlying patterns of the human mind.

For anthropologists culture has long stood for the way of life of a people, for the sum of their learned behaviour patterns, attitudes, and material things. Though they subscribe to this general view, most anthropologists tend to disagree however, on what the precise substance of culture is. In practice their work often leads some of them to a fascination with a single category of events among the many which make up human life, and they tend to think of this as the essence of all culture. Others, looking for a point of stability in the flux of society, often become preoccupied with identifying a common particle or element which can be found in every aspect of culture. Yet others are handling their theories and analytical approaches in a traditional way. The author has coined traditional to denote that they are basically interested in the whole spectrum range of informal (not a core) cultural phenomenon, with little or no emphasis on communication. The most up to date approach in this field is that of the thoughts and ideas of Edward T. Hall. It would be helpful to consider his approach, rather than that of Levi-Strauss, as far as this research is concerned which has been presented in his book, The Silent Language, 1973.

E.T. Hall and George L. Trager began their collaboration in developing a method for the analysis of culture, and their ultimate objectives included five basic steps:

1. To identify the building blocks of culture. What they later came to call the isolates of culture, akin to the notes in a musical score.
2. To tie these isolates into a biological base so that they could be compared among cultures. They also state that this comparison is done in such a way the conditions be repeatable at will. Without this, anthropology can lay no claim to being a science.
3. To build up a body of data and a methodology that would enable researchers to conduct research and teach each cultural situation in much the same way that language is taught without having to depend upon such qualities as (empathy) in the researcher.
4. To build a unified theory of culture that would lead us to further research.
5. Finally, to find a way to make their discipline tangibly useful to non-specialists.

Hall argues that since culture is learned, it also seemed clear that one should be able to teach it. Yet in the past there had been singularly little success in this regard with the important exception of language, one of the dominant threads of cultures. Dramatic progress in teaching, analysing and working with language made possible by modern linguistic science, prompted them to take a

very careful look at how this success had been achieved. Their observations led to the establishment of criteria for other systems of culture. In order to qualify as a cultural system, each system had to be:

- A) Rooted in a biological activity widely shared with other advanced living forms. It was essential that there be no break with the past.
- B) Capable of analysis in its own terms without reference to the other systems, and so organised that it contained isolated components that could be built up into more complex units, and paradoxically.
- C) So constituted that it reflected all the rest of culture and was reflected in the rest of culture.

These criteria are operational. That is, they are based on direct observation of the actual functioning of a cultural system, in this case language. The criteria from an anthropological point of view, are firm. There are ten separate kinds of human activities which Hall had labelled primary message systems (PMS). Only the first PMS involves language. All the other PMS are non-linguistic forms of the communication process. Since each is enmeshed in the others, one can start the study of culture with any one of ten and eventually come out with a complete picture. The primary message systems are:

1. Interaction
2. Association
3. Subsistence
4. Bisexuality

5. Territoriality
6. Temporality
7. Learning
8. Play
9. Defence
10. Exploitation (use of material)

In discussing the PMS one by one, Hall stressed on three things:- how biology pervades each PMS, how each can be examined by itself, and how each gears into the over-all network of culture.¹⁷

An example of the last point; materials and the rest of culture are intimately entwined. Men and women dress differently, tools go with work, time and space are measured with instruments, there are toys for play, books for learning, and even material signs of status. The relationship between materials and language is particularly close. Not only does each material thing have a name, but language and materials are often handled by man in much the same way. It is impossible to think of culture without language or materials. Think how difficult it would be to teach someone how to make a stone axe without being able to talk at all.

The close relationship between language and materials finds parallels in the linkage between other PMS. For example, association and defence are functions of each other (people form "protective associations", etc), as are work

¹⁷For more understanding of the PMS see E.T. Hall, 1973, pp. 38-59

and play, (people play and recreate after work), bisexuality and learning (sex-groups' behaviour are learned behaviour) space and time, (people use different behaviour-settings at different times).

It is important to remember that culture is not one thing but a complex series of activities interrelated in many ways, activities with origins deeply buried in the past when there was no culture and no men. The development of language and technology, an interrelated pair, made possible the storing of knowledge. It gave man a lever to pry out the secrets of nature. It was the necessary condition for that burst of creativeness which we think of as culture in the highest sense.

Each PMS is obviously so rich and complex that it can be made the subject of a lifetime's work. The last generalisation that should be made about culture is that it not only has great breadth and depth in the historical sense, but that it also has other dimensions of equal importance.

Culture is saturated with both emotion and intelligence. Many things that man does are not even experienced, for they are accomplished out of awareness. It appears that a great part of human activity is either the direct result of conscious thought or is suffused with emotion and feeling.¹⁸

A Map of Culture

Trager and Hall operated on the assumption that culture was bio-basic and had its wellsprings in a number of infra-cultural activities. They were reasonably certain that they had the basic components of culture since all the systems they developed satisfied the necessary criteria. But, what did the totality amount to? Given these systems could you drive culture out of such a base?

¹⁸E.T. Hall, 1973

Fig (7) THE AMERICAN MAP OF CULTURE
(BORROWED FROM E.T. HALL 1973)

Primary Message Systems	Interactional	Organizational	Economic	Sexual
Interaction	0 Communication Vocal Nonverbal Kinetics Language	1 Status and Role	2 Exchange	3 How the sexes interact
Association	1 Community	11 Social Class Gender Assignment	12 Economic Values	13 Sexual roles
Existence	2 Ecological community	21 Occupational Groupings	22 Work Moral work division of Occupational	23 Sexual division of labor
Bisexuality	3 Sex community (clans, sibs)	31 Marriage groupings	32 Family	33 The sexes Masculine, fem- inile (biological) (technical)
Territoriality	4 Community territory	41 Group territory	42 Economic Areas	43 Men's and women's territories
Temporality	5 Community cycles	51 Group cycles	52 Economic Cycles	53 Men's and women's critical activities
Learning	6 Community learning styles taught and learned	61 Learning groupings— educational institutions	62 Reward for teaching and learning	63 What the sexes are taught
Play	7 Community play—the arts and sports	71 Play groups— teams and tournaments	72 Professional sports and entertainment	73 Men's and women's play, fun, and games
Defense	8 Community defense— structured systems	81 Defense groups —armies, police, public health, or land religion	82 Economic patterns of defense	83 What the sexes defend (home, honor, etc.)
Exploitation	9 Communica- tion networks	91 Organizational networks (clans, build- ing groups, etc.)	92 Food, resources, and industrial equipment	93 What men and women are concerned with and own

Territorial	Temporal	Instructional	Recreational	Protective	Exploitation
4 Places of interaction	5 Times of interaction	6 Teaching and learning	7 Participation in the arts and sports active and passive	8 Protecting and being protected	9 Use of technology, science, writing, etc.
14 Local group roles	15 Age group roles	16 Teachers and learners	17 Entertainers and athletes	18 Protection (doctors, soldiers, police, etc.)	19 Use of group property
24 Where the individual exists, coexists, etc.	25 When the individual exists, coexists, etc.	26 Learning from working	27 Pleasure from working	28 Care of health, protection of well-being	29 Use of food; resources, equipment
34 Areas assigned to individuals by virtue of sex	35 Periods assigned to individuals by virtue of sex	36 Teaching and learning roles	37 Participation in recreation by sex	38 Protection of sex and fertility	39 Use of sex differentiating and assignment
44 Space formal space informal space boundaries	45 Scheduling of space	46 Teaching and learning space assignments	47 Fun, playing games, etc. in terms of space	48 Privacy	49 Use of fences and markers
54 Territorially determined cycles	55 Time cycles calendar	56 When the individual learns	57 When the individual plays	58 Berl. vacations, holidays	59 Use of time- telling devices, etc.
64 Places for learning	65 Scheduling of learning (groups)	66 Education learning education	67 Making learning fun	68 Learning with distraction and humor	69 Use of teaching aids
74 Recreational areas	75 Play seasons	76 Instructional play	77 Recreation fun playing games	78 Exercises	79 Use of recreational materials (playground)
84 What places are valued	85 The where of defense	86 Scientific, military, training learning	87 Mass exercises and military games	88 Protection formal military technical defense	89 Use of military for protection
94 Property— what is enriched, and measured	95 What periods are measured and recorded	96 School building, training days, etc.	97 Amusement and sports foods and indulgences	98 Fortifications, armaments, medical equipment, safety devices	99 Material systems cultural w/ recreational material technology

FIG. 8 THE SUDANESE MAP OF CULTURE ,

PRIMARY MESSAGE SYSTEM	INTERACTIONAL	ORGANISATIONAL	PROTECTIVE	ECONOMIC	INSTRUCTIONAL	TERRITORIAL	SEXUAL	EXPLOITATIONAL	TEMPORAL	RECREATIONAL
INTERACTION	0	1	2	3	4	5	6	7	8	9
0	COMMUNICATION VOCAL QUALIFIERS KINESTICS LANGUAGE COMMUNITY	STATUS AND ROLES	PROTECTING & BEING PROTECTED	EXCHANGE	TEACHING AND LEARNING	PLACES OF INTERACTION	HOW THE SEXES INTERACT	USE OF TELEPHONES, SIGNALS, WRITING, ETC	TIMES OF INTERACTION	PARTICIPATION IN THE ARTS & SPORTS (ACTIVE & PASSIVE)
ASSOCIATION	01	02	03	04	05	06	07	08	09	
1	DEFENCE COMMUNITY	SOCIETY CLASS CASTE GOVERNMENT	PROTECTORS (DOCTORS, CLERGY, SOLDIERS, POLICE ETC.)	ECONOMIC ROLES	TEACHERS AND LEARNERS	LOCAL GROUP	SEXUAL ROLES	USE OF GROUP PROPERTY	AGE GROUP ROLE	ENTERTAINERS AND ATHLETES
2	DEFENCE COMMUNITY	DEFENCE GROUPS, ARMIES, POLICE, PUBLIC HEALTH, ORGANISED RELIGION	PROTECTION, FORMAL DEFENCES, INFORMAL DEFENCES, TECHNICAL DEFENCES	ECONOMIC PATTERN OF DEFENCE	SCIENTIFIC RELIGIOUS AND MILITARY TRAINING	WHAT PLACES ARE DEFENDED	WHAT THE SEXES DEFEND (HOME, HONOUR ETC)	USE OF MATERIAL FOR PROTECTION	THE WHEN OF DEFENCE	MASS EXERCISES AND MILITARY GAMES
3	DEFENCE COMMUNITY	DEFENCE GROUPS, ARMIES, POLICE, PUBLIC HEALTH, ORGANISED RELIGION	PROTECTION, FORMAL DEFENCES, INFORMAL DEFENCES, TECHNICAL DEFENCES	ECONOMIC PATTERN OF DEFENCE	SCIENTIFIC RELIGIOUS AND MILITARY TRAINING	WHAT PLACES ARE DEFENDED	WHAT THE SEXES DEFEND (HOME, HONOUR ETC)	USE OF MATERIAL FOR PROTECTION	THE WHEN OF DEFENCE	MASS EXERCISES AND MILITARY GAMES
4	DEFENCE COMMUNITY	DEFENCE GROUPS, ARMIES, POLICE, PUBLIC HEALTH, ORGANISED RELIGION	PROTECTION, FORMAL DEFENCES, INFORMAL DEFENCES, TECHNICAL DEFENCES	ECONOMIC PATTERN OF DEFENCE	SCIENTIFIC RELIGIOUS AND MILITARY TRAINING	WHAT PLACES ARE DEFENDED	WHAT THE SEXES DEFEND (HOME, HONOUR ETC)	USE OF MATERIAL FOR PROTECTION	THE WHEN OF DEFENCE	MASS EXERCISES AND MILITARY GAMES
5	DEFENCE COMMUNITY	DEFENCE GROUPS, ARMIES, POLICE, PUBLIC HEALTH, ORGANISED RELIGION	PROTECTION, FORMAL DEFENCES, INFORMAL DEFENCES, TECHNICAL DEFENCES	ECONOMIC PATTERN OF DEFENCE	SCIENTIFIC RELIGIOUS AND MILITARY TRAINING	WHAT PLACES ARE DEFENDED	WHAT THE SEXES DEFEND (HOME, HONOUR ETC)	USE OF MATERIAL FOR PROTECTION	THE WHEN OF DEFENCE	MASS EXERCISES AND MILITARY GAMES
6	DEFENCE COMMUNITY	DEFENCE GROUPS, ARMIES, POLICE, PUBLIC HEALTH, ORGANISED RELIGION	PROTECTION, FORMAL DEFENCES, INFORMAL DEFENCES, TECHNICAL DEFENCES	ECONOMIC PATTERN OF DEFENCE	SCIENTIFIC RELIGIOUS AND MILITARY TRAINING	WHAT PLACES ARE DEFENDED	WHAT THE SEXES DEFEND (HOME, HONOUR ETC)	USE OF MATERIAL FOR PROTECTION	THE WHEN OF DEFENCE	MASS EXERCISES AND MILITARY GAMES
7	DEFENCE COMMUNITY	DEFENCE GROUPS, ARMIES, POLICE, PUBLIC HEALTH, ORGANISED RELIGION	PROTECTION, FORMAL DEFENCES, INFORMAL DEFENCES, TECHNICAL DEFENCES	ECONOMIC PATTERN OF DEFENCE	SCIENTIFIC RELIGIOUS AND MILITARY TRAINING	WHAT PLACES ARE DEFENDED	WHAT THE SEXES DEFEND (HOME, HONOUR ETC)	USE OF MATERIAL FOR PROTECTION	THE WHEN OF DEFENCE	MASS EXERCISES AND MILITARY GAMES
8	DEFENCE COMMUNITY	DEFENCE GROUPS, ARMIES, POLICE, PUBLIC HEALTH, ORGANISED RELIGION	PROTECTION, FORMAL DEFENCES, INFORMAL DEFENCES, TECHNICAL DEFENCES	ECONOMIC PATTERN OF DEFENCE	SCIENTIFIC RELIGIOUS AND MILITARY TRAINING	WHAT PLACES ARE DEFENDED	WHAT THE SEXES DEFEND (HOME, HONOUR ETC)	USE OF MATERIAL FOR PROTECTION	THE WHEN OF DEFENCE	MASS EXERCISES AND MILITARY GAMES
9	DEFENCE COMMUNITY	DEFENCE GROUPS, ARMIES, POLICE, PUBLIC HEALTH, ORGANISED RELIGION	PROTECTION, FORMAL DEFENCES, INFORMAL DEFENCES, TECHNICAL DEFENCES	ECONOMIC PATTERN OF DEFENCE	SCIENTIFIC RELIGIOUS AND MILITARY TRAINING	WHAT PLACES ARE DEFENDED	WHAT THE SEXES DEFEND (HOME, HONOUR ETC)	USE OF MATERIAL FOR PROTECTION	THE WHEN OF DEFENCE	MASS EXERCISES AND MILITARY GAMES

Remember out of their criteria for cultural systems had been that each system had to be reflected in the rest of culture as well as reflecting all other cultural systems. This led to the creation of a chart that would show in one place the various combinations of the PMSs with each other. They began by constructing a two-dimensional grid with the PMS on the left and their adjectival counterparts across the top.¹⁹

In this way it was possible to see the types of activities resulting from the various combinations of the PMS, with a chart that turned out to be a sort of cultural equivalent of the periodic tables for chemistry. They took two PMSs like subsistence and interaction and asked themselves the following question: "What are the economic extensions of interaction and its reciprocal, the interactional extensions of subsistence? They came up with "exchange" and "the ecological community". Economic patterns of association and organisational patterns of subsistence gave them "economic roles" and "occupational groupings"; instructional results of subsistence and the economic results of learning gave them "learning from working" and "rewards for teaching and learning". In some cases they were puzzled at first as to what to indicate under a given heading. The protective patterns of territoriality gave them pause for quite a while until it occurred to them that this was, of course, "Privacy" on the individual level, while the territorial patterns of defence have to do with the organisation of territory as a part of a system of defence (natural barriers, like rivers, mountains, canyons, forests, etc).

It was discovered that in working with the grid the pattern of analysis imposed its own rules. Whatever they decided on in one part had to be consistent with everything else. For example, they thought for a time that the recreational

¹⁹Fig: (7)

extensions of interaction were pleasure, but the over-all pattern of the chart plus certain self-checking feature indicated that "participation in the arts and sports" was a better choice.

Notice of the self-checking features mentioned above came about in the following way: by turning to the chart the reader will note that there is a diagonal line from the upper left to the lower right formed by the interaction of each PMS with its adjectival counterpart.²⁰ They observed that in filling in the spaces in the grid those activities above the diagonal were concerned with the individual. Those below the diagonal with the group counterparts. Thus the recreational results of association are "entertainers and athletes", while the organisational results of play are "play groups, teams, and troupes".

The chart as it now stands, along with the rules for its use, is actually a kind of mathematics of culture that will be useful to the specialist and will also have certain other applications worthy of mention. It is, of course, limited by the fact that it has only two dimensions.

By looking at the chart the reader will observe that it has no content or substance and is restricted entirely to headings. Those headings which suit the study under consideration, will be picked up and exemplified, discussed and related to our main theme.²¹ Its present potential is as a classification system and a check list for behavioural scientists, who, when working on large projects, can be sure that no major categories have been overlooked. It is also a special kind of map of the categories of human activities. As a map it can be useful in allocating and keeping track of work responsibility in group projects by assigning a given area to each worker. The mature student may

²⁰Ibid

²¹Chapter 3

also find it stimulating to experiment with the chart and what can be done with it. There is more than the one axis indicated by the basic systems that intersect. The various areas of the chart are concerned with quite different things; the upper left portion tends toward formal activities, the middle toward the informal, and the whole lower right side toward the technical. While it is quite apparent that each category is discrete, activities which are related occur in adjacent areas. When developed in detail by the breaking down of each category into its formal, informal and technical aspects, new dimensions are added.

In recent years a constantly recurring problem is the classification and codification of data which is accumulating too rapidly for most people to handle. The system presented here has 100 major slots, each representing complexes of activities which can be broken down indefinitely. Each number is permanently identified with a major field - 0, interaction; 2, subsistence; 6, learning; 8 defence, and so on. Each of the 100 categories can be quickly subdivided by 10 and each of the resulting sub-categories by 10 again. Thus 80 is community defences, 80.2 the economic aspects of community defences, and 80.5 the temporal aspects. The advantage of such a system over some others is that it has a theoretical base that gives it a consistency and design lacking in the empirical models.

At this point it is important to draw the reader's attention to the fact that the order in which the PMS are given appears to be highly important. Originally this order was chosen because given these activities, it was closest to the actual phylogenetic order; that is, the activities are learned and integrated in the life history of each organism. The same order can be found in that organism's evolution. Having established this order they also later observed that each system is paired in a functional way with one another; viz, time with space, work with play. The order is also consistent with these paired

relationships. An interesting sidelight on order is that most societies rank the systems differently from the order given. The ranking a society assigns to the systems provides a quick way of getting at a cultural profile that can be compared with others. For example, the United States informants questioned on this departed from the basic order as regards materials, recreation, and bisexuality. As could be predicted for Americans, materials and recreation were placed near the top, recreation and bisexuality competed for the last place. Sudanese informants differed considerably from the Americans. They separated time and space, putting time last; materials were ranked low, while defence system were ranked with communication at the top.²²

Trager and Hall have also discovered that, by sticking to one of the PMS at a time when working with an informat, it is possible to keep a firm footing in the known at the same time that one is getting into new and unknown areas. For example, temporal isolates of the informal variety as elicited from an Arab also shed new light on Arab values in a way that could have otherwise been difficult to achieve. So, it was decided to borrow E.T. Hall's map of culture for the following reasons:

1. It is the only trial of its kind in existence today.
2. Since his map of culture is based and rooted in biological activity, it could be applied and compared among other cultures.
3. The map treats culture in its entirety as a form of communication.
4. Its potential is as a classification system, a check and

²²Fig: (8)

discovery list for those cultural institutions relevant to the built environment.

5. It is a special kind of map of the categories of human activities.
6. It has a theoretical base that gives it a consistency of design.
7. Most societies rank the system (PMS) differently from the order given, which is an American one. The ranking a society assigns to the system provides a quick way of getting a cultural profile that can be compared with others.²³

However, the methods utilised in this study examine three types of data:

1. The built environment actually created.
2. The institutionally related activities which the built environment was meant to accommodate.
3. The way the inhabitants reacted towards this built environment, as manifest in the record they made of it.

These three interlinked issues are strongly related to the central assumption of the study, mentioned in Chapter 4.

The methods used here are the questionnaire; the behavioural evidences, the cultural implications and the author's own experience. Although they are distinct, but intermingled and linked together. This link is very explicit in the

²³Figs: (7) and (8)

interpretations and explanation of the data. Despite the fact that the questionnaire is the most dominant, the author's experience forms the central part of the discussions. The other approaches are intended to support the findings of the analysis or oppose them.

In addition world-wide climate such as that of the Skimoo and the Sahara desert etc., is a very important factor, contributing to some extent in the outcome of the final form of the built environment. It determines largely the type of building materials to be used, the physical form of the built environment, such as height, openings, roof and the general relationship between individual houses and street patterns.

Since this current study deals with the influence of the socio-cultural aspects on the built environment and vice-versa, it is thus logical to discuss briefly the impact of the most influential climatical features in shaping the final form of the built environment.²⁴

4.3.4. Delimitations:

It is obvious that man-environment relationship is a very complex theme, in the sense that it involves many disciplines as well as different factors. So it would be Utopian to try and deal with all related areas. Accordingly, some limits have been set from the start on the extent of the study, in order to have a manageable study in context; environmental solution and time limits. In the first instance no particular emphasis will be put on psychological studies, because it is out of scope with this study. When dealing with the cultural institutions only these institutions which are strongly relevant to the built environment will be discussed, when using E.T. Hall's map of culture. Finally, a

²⁴Chapter 2

detailed study of the effects of the climate on the built environment, is far reaching in the scope of this study, as has been mentioned above. A natural extension of the study could be to explore which of the two subjects; culture and climate, has more influence in shaping and forming the built environment, although both are so strongly related in any given situation. There is a wide spectrum of forms of behaviour, some are strongly linked to the physical environment, others to climate, others to ecology and yet others to human nature and knowledge, etc. However, what the study is concerned with here, are those patterns of behaviour, which more or less, are the products of the existing built environment and socio-cultural factors, which hopefully will be more specific in the next chapter.²⁵

²⁵Chapter 5

Part (3)

CHAPTER 5

SHARED DATA AND GENERAL FINDINGS

5.1. Introduction

The aim of this chapter is to spell out the general data shared between the different research issues¹ to avoid repetition. This repetition is mainly due to the fact that the same questions have been compared each time with one characteristic of respondents, i.e. town, neighbourhood, socio-economic status, etc., related to a specific research issue. Certain general factors have been found which have relevance to all the research questions. These form the substance of this chapter. However, the general factors were not investigated in the observational technique, thus no behavioural data will be discussed in this Chapter but will be dealt with under the specific research issues. All the implications from the cultural institutions will be considered a general finding related to each research issue, and will be discussed here, since they are related to the wide spectrum of people's daily life.

This chapter also deals with the very specific behaviour summarised by the utilisation of the factor analysis.

5.1.1. An Introduction to the SPSS Computer Programs

One of the most popular and widely used languages for statistical analysis is SPSS, which is an integrated system of computer programmes designed for the analysis of social science data. The system provides a unified and comprehensive package that enables the user to perform many different types of data analysis in a simple and convenient manner. SPSS allows a great deal of flexibility in the format of the data transformation and file manipulation and

¹ Chapters 6 - 13

offers the researcher a large number of statistical routines commonly used in the social sciences.

5.1.2. Level of Measurement

When data has been collected, the process of assigning a value or score to the observed phenomenon constitute the process of measurement. The values defining the assignment of an appropriate value determine the level of measurement. The different levels are distinguished on the basis of ordering, and distance properties inherent in the measurement rules, and knowledge of these rules. Their implications are important to the user of statistics because each statistical technique is appropriate for data measured only at certain levels.

The traditional classification of levels of measurement was developed by S.S. Stevens in 1964, he identified four levels.

1. Nominal Level Measurement

It is the lowest in Steven's typology, because it makes no assumption whatever about the values assigned to the data. Each value is a distinct category, and the value itself serves merely as a label or name, hence; "nominal" level for the category. No assumption of ordering or distances between categories is made. For instance, the city where a person was born is a nominal variable. There is no inherent ordering among cities implied by such a variable. Although we could order cities according to their size, density or degree of air pollution, these are quite different concepts from place to place.

2. Ordinal – Level Measurement

When it is possible to rank order all of the categories according to some criterion, then the ordinal level of measurement has been achieved. For instance, the classification of social classes as working, middle, and upper is ordered according to status. Each category has a unique position relative to other categories.

3. Interval - Level Measurement

In addition to ordering, the interval level of measurement has the property that the distances between the categories are defined in terms of fixed and equal units as with the case of temperature. Thus the difference between 30 and 31 degree Fahrenheit, is the same as the difference between 80 and 81 degree Fahrenheit. The important thing to note is that an interval scale does not have an inherently determined zero point. In the Fahrenheit and Centigrade systems, zero degrees is determined by an agreed-upon definition. Neither implies the absence of heat. Consequently, interval-level measurement allows us to study differences between things, but not their proportionate magnitudes. That is, it could be incorrect to say that at 80 degrees Fahrenheit twice as much heat is present as at 40 degrees Fahrenheit.

In social research, it is very difficult to find true interval-level measurements. Usually if distances between categories can be measured by some fixed unit, a natural zero point can be established. Yet, a great many statistics assume no more than an ordinal level of measurement.

What must be kept in mind is that statistics developed for one level of measurement can always be used with higher-level variables, but not with variables measured at a lower level. The medium, for example, assumes an ordinal level of measurement, but it can be used legitimately with interval – or ratio – level scales; it can't however, be applied to variables measured at the nominal level.

4. Ratio – Level Measurement

It has all the properties of an interval scale with the additional property that the zero point is inherently defined by the measurement scheme. Thus, when we measure physical distances, whether we use feet or metres, a zero distance is naturally defined:- it is the absence of any distance between two objects. This property of a fixed and given zero point means that ratio comparison can be made, as well as distance comparison. For example, it is quite meaningful to say that a six-foot tall man is twice as tall as a three-foot tall boy.

Since ratio-level measurements satisfy all the properties of the real number system, the numbers employed to describe the cases are more convenient symbols. Any mathematical manipulations appropriate for real numbers can also be applied to ratio level measurements, although this level of measurement is common in social research, very few statistics require all of its properties. However, it is important to remember that all statistics requiring variables measured at the interval level are also appropriate for use

with variables measured at the ratio level.

5. The Special Case of Dichotomies

A dichotomy is a division in variable resulting in only two possible categories of values, such as sex "Male or Female". While some dichotomies which are based on a natural ordering, "passing a course or failing it", may have no inherent basis on which either category could be judged superior, preferable, larger etc., yet any dichotomy can be treated as though it were an interval-level measurement and in some cases even a ratio-level variable.

Although a rank order may not be inherent in the category definitions either arrangement of categories satisfied the mathematical requirements of ordering. It does not matter which end of ranking is considered high, and which is low, the requirement of a distance measure based on equal-sized intervals is also satisfied, because there is only one interval naturally equal to itself. Consequently, a dichotomy can be treated as either a nominal, ordinal, or interval-level measurement, depending upon the research situation.

6. Other Typologies for Levels of Measurement

A simpler scheme than Steven's is to divide variables into quantitative and qualitative types. Quantitative variables are those for which a fixed unit of measurement is defined – essentially, variables at the interval and ratio levels. These are the variables for which the most powerful and

sophisticated techniques have been developed. Qualitative variables then, are all others – namely, those at the nominal or ordinal level.

5.1.3. Statistical Procedures in SPSS

SPSS contains many of the most common statistical procedures employed by social scientists, but it is by no means exhaustive of the many useful procedures that have been invented for social research or that have come from other fields to the social sciences. No single research endeavour would normally employ all or even a larger number of these procedures, but it will often be the case that at least one procedure from each of the groups will be employed at some point during the analysis if the research necessitates. Accordingly, the analysis of the current research has dictated the employment of both crosstabs and factor analysis, which will be introduced briefly below:-

Crosstabs

A crosstabulation (also referred to as a contingency table) is joint frequency distribution of cases according to two or more satisfactory variables. The display of the distribution of cases by their position on two or more variables is the chief component of contingency table analysis and is indeed the most commonly used analytical method in the social sciences. These joint frequency distributions can be statistically analysed by certain tests of significance, e.g., the chi-square statistic, to determine whether or not the variables are statistically independent; and these distributions can be summarised by a number of measures of association, such as the contingency coefficient, Phi, tau, gamma, etc., which describe the degree to which the values of one variable predict or vary with those of another.

Factor Analysis

The purpose of this introduction is to provide the reader with a working understanding of the basic concepts of factor analysis without the burden of statistical details. The emphasis is towards providing the reader with a general orientation to the topic rather than the presentation of calculating logarithms. It will be assumed in the following discussion, however, that the reader has some grasp of the meaning of correlation coefficients. Verbal descriptions of a complex statistical method without recourse to exact mathematical representations are bound to be misleading if taken verbatim. The reader is therefore advised to consult one standard treatment of the subject in conjunction with this chapter.²

The single most distinctive characteristic of factor analysis is its data-reduction capability. Given an array of correlation coefficients for a set of variables, factor-analytic techniques enable us to see whether some underlying patterns of relationship exists such that the data may be "rearranged" or "reduced" to a smaller set of factors or components that may be taken as source variables accounting for the observed interrelations in the data.

The exploratory uses of factor analysis which have been employed in this study, are the most common but should not be taken as the sole rationale for factor analysis. As more factor-analytic studies are made, the confirmatory uses of factor analysis, or hypothesis testing, will take on greater importance. It should be noted also that although all factor-analytic applications are ultimately based on the data-summarising capability of the method, the specific applications to various research problems are bounded only by the user's imagination.³

²Harman, 1967; Rummel, 1967.

³see Rummel, 1967

5.2. General Findings

In our specific case the questionnaire dealing with respondents' behaviour in the built environment has been factor analysed.

The major factors which emerged from the analysis of the questionnaire were as follows:

1. Psychological behaviour, includes contact, isolation, having fresh air, having nice scenery, sense of security, lovely, lively, nicely arranged; having nice services; and having a meal.
2. Cultural behaviour; includes privacy and sexes segregation; opinion about mis-behaviour; frequency of visits; attending national ceremonies; social restriction on children's playing areas; worshipping; and social (giving condolences, marriage, naming, circumcision, etc) behaviour.
3. Recreational behaviour; which includes: entertaining guests, socialisation; leisure time.
4. Playing behaviour, includes children playing, and ceremonies.
5. Cognitive behaviour, is the knowledge an individual has about open spaces, public park and the city as a whole.
6. Climatical behaviour, includes domestic use of yards, i.e., cooking, sleeping and washing.
7. Planning/spatial: these are not behaviour as such, but are related to behaviour; i.e., amendments needed to existing

housing; close open spaces needed, where do children play and ceremonies performed; and the provision of yards.

These are the most important general factors to emerge from the questionnaire. They represent the seven independent ways in which the set of questions in the questionnaire can be reformed.

When comparing some aspects of the questionnaire, i.e., use of yards, children playing areas etc., with some characteristics of a respondent, such as the town and neighbourhood where he lives, his socio-economic group, etc., the outcome, (finding), is the same in all cases. However the final explanation, interpretation and analysis will be different because of the context, (town, neighbourhood).

It should be mentioned that significant relationships in the tables are abstracted and graphed. This has been carried out for a series of chi-square tests, where the level of significance was greater than ($\phi = 0.01$). This applies to all questionnaire analysis as presented in this study.

5.3. Shared Data

5.3.1. The Use of Yards

The provision of front and back yards is more or less a universal phenomenon. With the exception of some densely populated countries, or communities living very primitive lives in remote areas, usually the front yard is used as a transitional area between the public side of the environment (*street*), and the very private one (*house*). This situation is applicable in privately owned houses, with distinct and demarcated plot areas only. But the situation is quite different in communal housing estates or high rise flats, where both yards are communally owned. The use of both yards is varying from culture to culture, as is their physical configurations. In some, the front yard is rarely in use

throughout the year. In others, no physical barriers were built, except a low demarcation for territorial purposes. Yet in other cultures a two metre-high solid wall is erected. This has made it very interesting, in many cases, to ask what is going on behind these walls? The answer could be to conduct a socio-cultural investigation to reveal the kind of activities being carried out in the front yards, as well as the sex dominating its use. The rear yard is usually accommodating the most private life of a family. However, whether it is dominated or allocated for one sex or another, is varying among different cultures, as is its physical configuration and visual projection.

Generally speaking Muslim societies are characterised by the notion of sex segregation, which to some degree, should have its imprint on the spatial structure of the house, and other behaviour settings, e.g., schools and mosques. Even in shopping areas, airport and bus terminals, each sex has its own queues.

Within the house, the women's yard constitutes the core of the household. Without this, the family's values, rituals and roles, could not be maintained properly. If the women's yard has been provided, presumably compatible with families size it could constitute the bedrock for all household functions, such as preparing food, cooking, sleeping, reception, recreation, entertaining, washing, sex segregation, storage area, playing, and keeping domestic animals. However, due to the Western view of spatial specialisation, many families provided for, and adapted themselves to the new situation. Accordingly, sitting and living rooms have been provided. Despite this, almost all the rooms are poorly utilised. Many people sleep in the yards or balconies for ten months a year. Sitting, living, and diningrooms are used occasionally.

In the current study, having four different study areas as have been mentioned in Chapter 2, the questions needing answers are: have the residents of these

areas perceived the use of the yards in the same way; does the size of the yards, and their availability affect the perception of the residents and thus their behaviour?

Generally speaking the Sudanese house is characterised by two-metre high solid walls, with separate entrances for males and females. Obviously, for this reason, the perception of both yards as means of visual contact between the inside and the outside is out of the question.⁴ Also in most cases, the women's yard is located at the rear of the house, adjacent to the neighbouring house's women's yard. The majority of residents in Khartoum City perceived the use of women's yards as being for domestic purposes – cooking, preparation of food, washing, in short, household activities. A large minority perceived it for segregation of sexes, outdoor sleeping and out-door entertaining "against the severe weather". In most cases, the women's yard is very small and cannot accommodate many activities. But the men's yard, has no prescribed perception of use. This is mainly due to the fact that, third class houses hardly have men's yards, or very small ones in relation to family size. Although some houses in first and second class areas have got transparent fences, the residents do not perceive the use of men's yards as having visual contact with the public environment. It seems that the idea of transparent fences has been copied from other cultures without proper understanding of its use. This has been supported by the fact that after their implementation, later on, such fences had been abandoned, either by building two metre-high solid walls, or temporarily closing them up. In Khartoum North, the situation is slightly different. The use of the women's yard is dictated by climate, and the men's yard for entertaining guests. This, for the same reasons applies in Khartoum; despite the fact that Khartoum North is dominated by working class residents.

⁴Ref. Table 4

Table (4): Shows the relation between towns and the use of women's and men's yards

Yards	Women's yard										Men's yard						
	Enjoy Scenery	Quiet	Safe	My own Property	Privacy	Segregation	Weather her	Domes- tic	Others (serv- ants)	What goes on	See people	For Guests	Weather	Every one does it	No else	Segreg- where	Other ation
Khart- oum	(1) 1.1%	(18) 20.0%	(6) 6.7%	(6) 6.7%	(5) 5.6%	(36) 40.0%	(42) 46.7%	(52) 57.8%	(3) 3.3%	(1) 1.1%	(2) 2.2%	(35) 38.9%	(26) 28.9%	(4) 4.4%	(2) 2.2%	(3) 3.3%	(10) 11.1%
Umdor- man	(0) 0.0%	(28) 40.6%	(29) 42.0%	(5) 7.2%	(5) 7.2%	(45) 65.2%	(50) 72.5%	(52) 75.4%	(0) 0.0%	(1) 1.6%	(0) 0.0%	(62) 89.9%	(57) 82.6%	(7) 10.1%	(2) 2.9%	(6) 8.7%	(17) 24.6%
Khart- oum North	(0) 0.0%	(15) 27.8%	(5) 9.3%	(5) 9.3%	(1) 1.9%	(19) 35.2%	(40) 74.1%	(19) 35.2%	(1) 1.9%	(1) 1.2%	(0) 0.0%	(44) 81.5%	(20) 37.0%	(2) 3.7%	(2) 3.7%	(1) 1.9%	(5) 9.3%
Tuti	(0) 0.0%	(5) 71.4%	(4) 57.1%	(1) 14.3%	(0) 0.0%	(7) 100.0%	(7) 100.0%	(7) 100.0%	(0) 0.0%	(2) 28.6%	(0) 0.0%	(7) 100.0%	(5) 71.4%	(0) 0.0%	(0) 0.0%	(1) 14.3%	(5) 71.4%

Table (5): Shows the relationship between neighbourhoods' groups and the use of women's yards.

Neighbourhoods groups	Enjoy scenery	Quiet	Safe	My property	Privacy	Segregation	Weather	Domestic	Others (for servants)
1	(1) 4.5%	(6) 27.3%	(1) 4.5%	(3) 13.6%	(3) 13.6%	(11) 50.0%	(9) 40.9%	(13) 59.1%	(4) 18.2%
2	(0) 0.0%	(14) 63.6%	(5) 22.7%	(3) 13.6%	(1) 4.5%	(10) 45.5%	(9) 40.9%	(9) 40.9%	(1) 4.5%
3	(0) 0.0%	(7) 19.4%	(9) 25.0%	(1) 2.8%	(2) 5.6%	(22) 61.1%	(31) 86.1%	(25) 69.4%	(0) 0.0%
4	(0) 0.0%	(4) 9.3%	(3) 7.0%	(2) 4.7%	(3) 7.0%	(19) 44.2%	(31) 72.1%	(27) 62.8%	(0) 0.0%
5	(0) 0.0%	(0) 0.0%	(0) 0.0%	(0) 0.0%	(1) 4.8%	(2) 9.5%	(1) 4.8%	(4) 19.0%	(0) 0.0%
6	(0) 0.0%	(2) 20.0%	(2) 20.0%	(0) 0.0%	(0) 0.0%	(4) 40.0%	(4) 40.0%	(8) 80.0%	(0) 0.0%
7	(0) 0.0%	(33) 50.0%	(22) 33.3%	(8) 12.1%	(1) 1.5%	(39) 59.1%	(54) 81.8%	(44) 66.7%	(0) 0.0%

Table (6): Shows the relation between neighbourhoods' groups and the use of men's yards

Neighbour- hoods groups	See what goes on	See people	For guests and visitors	Weather	Every one does it	Nowhere else	Segregation	Others (Children, ceremonies)
1	(2) 9.1%	(2) 9.1%	(17) 77.3%	(15) 68.2%	(2) 9.1%	(1) 4.5%	(4) 18.2%	(10) 45.5%
2	(0) 0.0%	(0) 0.0%	(12) 54.5%	(13) 59.1%	(3) 13.6%	(1) 4.5%	(0) 0.0%	(2) 9.1%
3	(0) 0.0%	(0) 0.0%	(34) 94.4%	(24) 66.7%	(3) 8.3%	(2) 5.6%	(5) 13.9%	(1) 2.8%
4	(0) 0.0%	(0) 0.0%	(15) 34.9%	(4) 9.3%	(0) 0.0%	(0) 0.0%	(0) 0.0%	(1) 2.3%
5	(0) 0.0%	(0) 0.0%	(2) 9.5%	(0) 0.0%	(0) 0.0%	(0) 0.0%	(0) 0.0%	(0) 0.0%
6	(0) 0.0%	(0) 0.0%	(8) 80.0%	(5) 50.0%	(1) 10.0%	(0) 0.0%	(0) 0.0%	(2) 20.0%
7	(3) 4.5%	(0) 0.0%	(60) 90.9%	(47) 72.1%	(4) 6.1%	(2) 3.0%	(2) 3.0%	(21) 38.1%

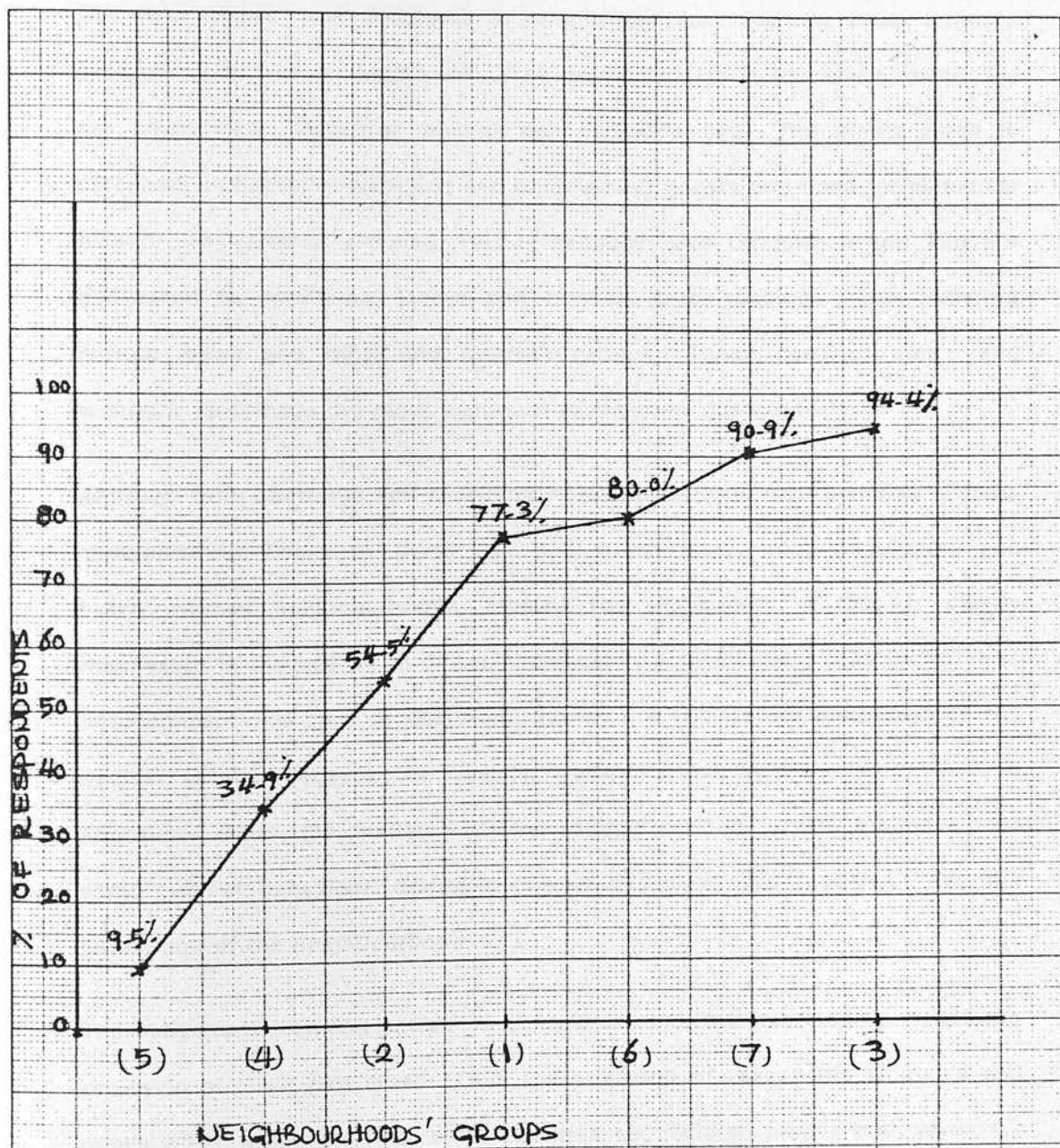


FIG (9 a) SHOWS THE RELATION BETWEEN NEIGHBOURHOODS' GROUPS

AND THE USE OF MEN'S YARDS FOR ENTERTAINING GUESTS

The data shows that Residents in Umdorman and Tuti do have multiple perceptions of use for both yards. The women's yard is perceived mainly for sex segregation, climatical reasons and domestic use. The men's yards is perceived as being for receiving and entertaining guests and used for climatical reasons, i.e., outdoor sleeping. This is because both Umdorman and Tuti are dominated by traditional layout and houses; with spacious yards, winding narrow alleys and tribal and clannish groups. These uses of men's and women's yards have the most important relations in this context.

Although both Khartoum and Khartoum North have a grid-iron planning system, comparatively, Khartoum North has very small plots, poor population, and heterogeneous neighbourhoods, (*triba*). The implication of this is clearly manifested in the use of yards for climatical and entertaining reasons. This is not dominant and clear in Khartoum, due to the very recent shift towards the nuclear family,⁵ Because the density, (residents/plot size) is larger than in Khartoum. Thus the pattern of the neighbourhood could influence the socio-cultural behaviour, domestic use of women's yard "cooking", and the perception of the neighbourhood.

The indigenous planning pattern in Umdorman and Tuti has made possible the provision of large plot areas. Thus the provision of reasonable women's and men's yards, which allow for some activities, i.e., children play in both yards.

On the contrary in Khartoum and Khartoum North, small plots have been provided in third class areas, based on income level, rather than on family size and social relationship. The consequences is that eighty percent of the population is living in small houses not matching with their family's sizes. This situation has led to the provision of only one yard for both sexes in some

⁵Chapter 13

neighbourhoods; in others no yard has been provided at all.

Furthermore similar analysis regarding the use of both yards have been conducted with neighbourhoods' groups⁶, classes⁷ and sex-groups. To avoid repetition, a brief summary will be given here.

The following uses of both yards have been agreed upon by the respondents in the above mentioned categories:

1. The use of women's yards for domestic purposes.
2. The use of men's yards for entertaining guests and visitors,
(for climatical, social and spatial reasons).
3. The use of both yards for segregating sexes rationally.
4. Both are used for outdoor sleeping at night.

The most important relationships in these contexts are the relationship between neighbourhoods' groups and the use of women's yards for domestic purposes⁸, and with men's yards for entertaining guests and for climatical purposes.⁹

The variations manifested between respondents in different categories will strongly resolve sub-problems (1), (2), and (3).¹⁰ These physical and spatial variations which in turn have resulted in behavioural variations (segregation,

⁶Chapter 2; Table (5); Table (6); Fig (9a)

⁷Table (7)

⁸ Table 5

⁹Table (6)

¹⁰Chapters (6), (7), and (8)

domestic uses, entertaining), between respondents in the different categories will support the central assumption of the current study.¹¹ That the socio-cultural needs of the people of northern Sudan will influence the type of environment they produce and vice versa.

5.3.2. Children Play Areas and Their Restrictions

For children, the neighbourhood is more than a physical setting. It defines a social universe. Children, like the elderly, have a particularly heavy investment in the environment.¹² Because they are minimally mobile and spend relatively little time away from the area in which they live, neighbourhoods play a special role in children's daily lives.

Sometimes, especially after school hours, children seem to determine the character of neighbourhoods. With parents off at work, or busy at home, many residential areas assume the vibrancy of those younger and less harried. Studies by Barker and Wright and others¹³ argue that children are often the exclusive carriers of the life, stories and histories of their neighbourhoods.

As a physical and social environment, neighbourhoods influence the things children do, like to do, and are able to do. This study examines the ways in which neighbourhoods as physical environments affect children playing and play patterns.

About one third of respondents in the main three towns have their children playing in the neighbours' houses. This situation is more noticeable in Tuti,

¹¹Chapter 4

¹²Foley, 1950; Foote, 1960; Suttles, 1972; Lynch et al, 1977; Chapter 14

¹³Barker and Wright 1954; Gans 1967; Cooper 1975

where two thirds of respondents' children play in neighbours' houses, because Tuti is tribally and clannishly a homogeneous village. There is no social restriction problem, (bearing in mind the planning patterns, the provision of yards in neighbours' houses, or the age groups of children), which encourages children to play in neighbours' houses.¹⁴

TABLE (8): Shows where children play in relation to the four study areas

Town	Women Yard	Men Yard	Neighbour House	Street	Close space	Far space	Home Village
Khartoum	(33) 36.7%	(29) 32.2%	(33) 36.7%	(50) 56.6%	(7) 7.8%	(13) 14.4%	(0) 0.0%
Umdorman	(39) 56.5%	(43) 62.3%	(23) 33.3%	(46) 66.7%	(9) 13.0%	(16) 23.2%	(3) 4.3%
Khartoum North	(27) 50.0%	(11) 20.4%	(14) 25.9%	(28) 51.9%	(4) 7.4%	(7) 13.0%	(1) 1.9%
Tuti	(6) 85.7%	(6) 85.7%	(4) 57.1%	(5) 71.4%	(1) 14.3%	(2) 28.0%	(0) 0.0%

The majority of respondents in the four study areas, have their children play in the streets. However there are some variations, which could be due to the amount of traffic in the street, the availability of yards in the house, and the age of children.¹⁵ These variations has made the street the most important relation in Table (8), together with the use of both men's and women's yards, for children play area.¹⁶

¹⁴Table (8)

¹⁵Ibid

¹⁶Figs: (12b) and (13b)

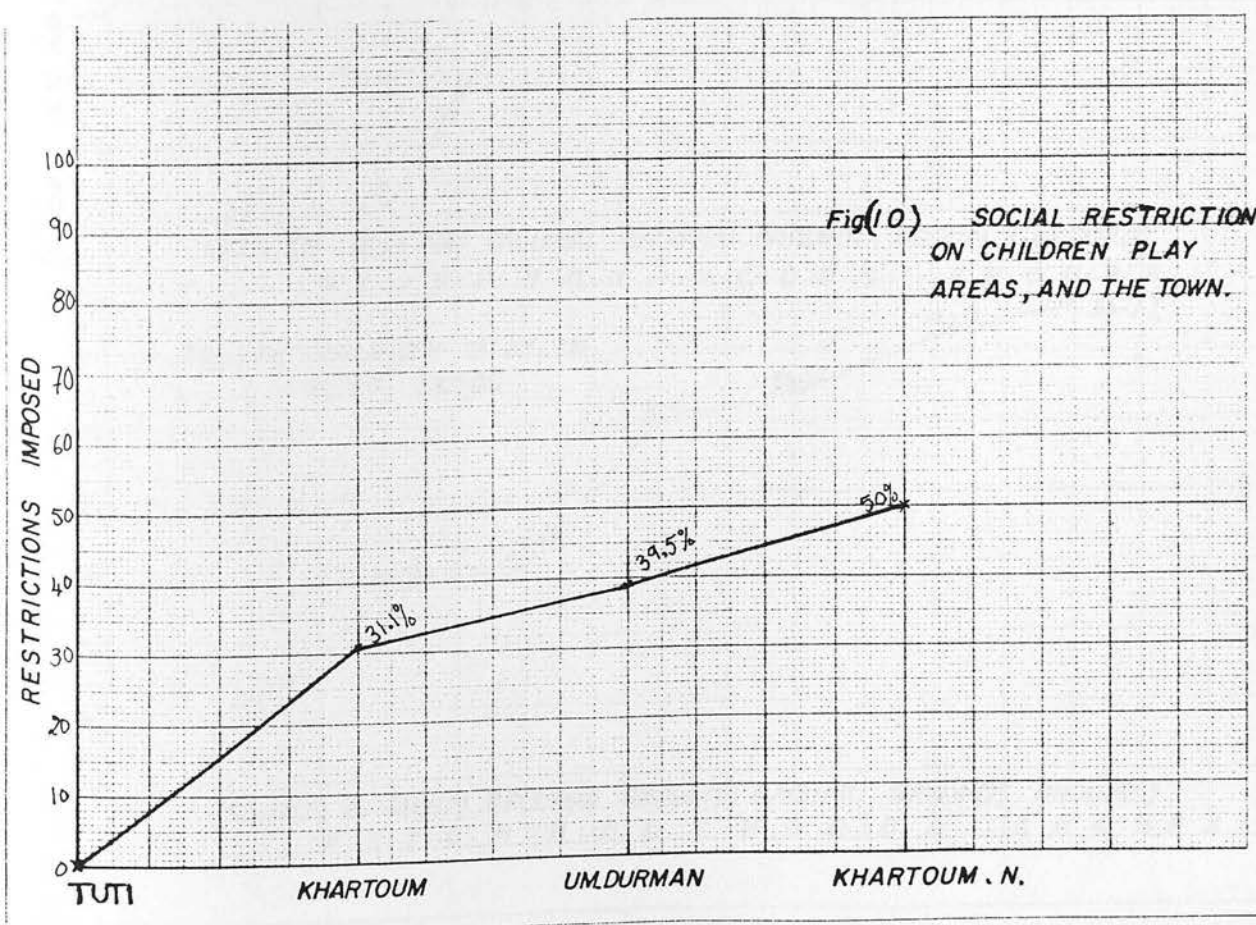
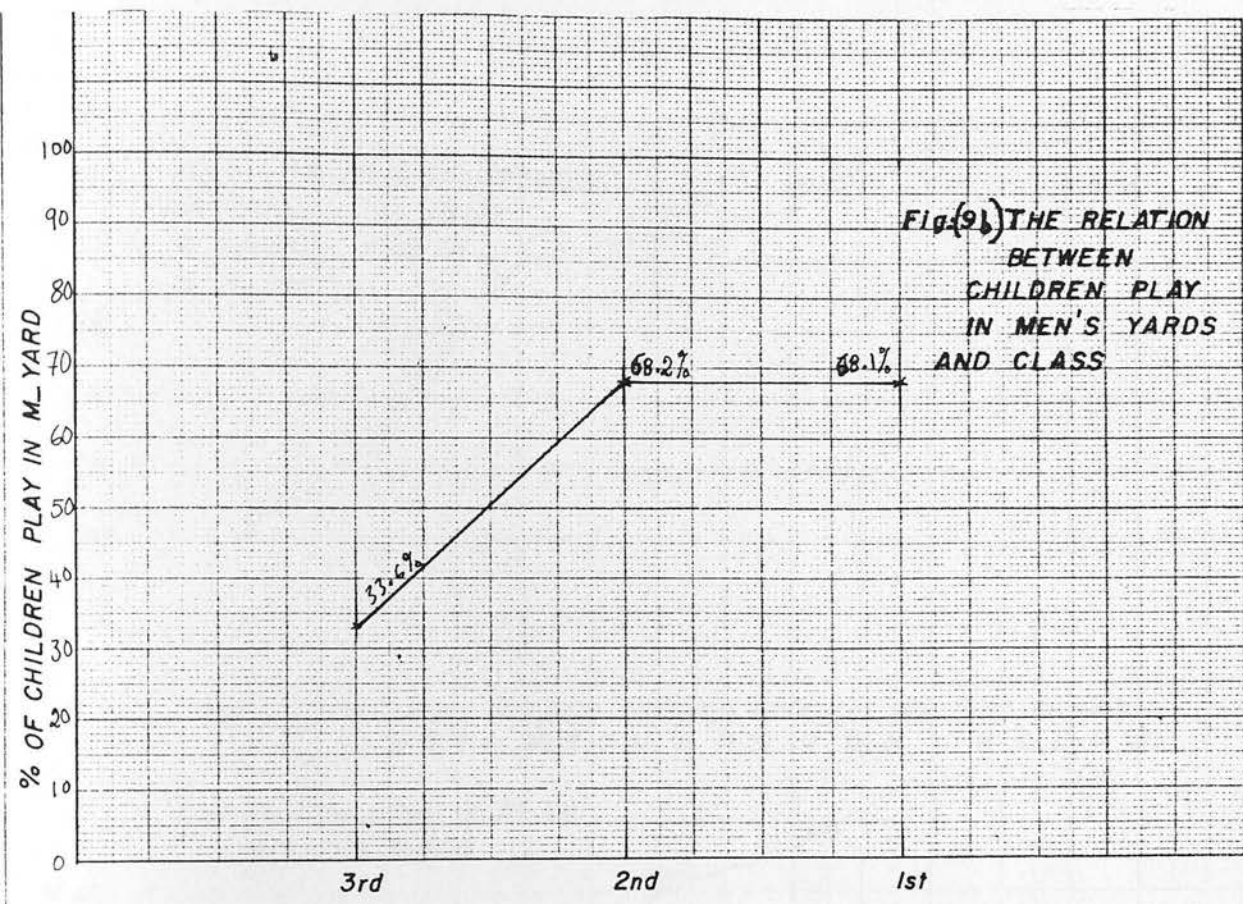
Almost all respondents do not allow their children to play either in close open spaces, far open spaces, clubs, family houses or home villages within the Khartoum area. This is mainly due to the lack of close supervision, transportation, and lack of intimacy in the case of close open spaces. Despite this from time to time children have the chance to play in such places accompanying their relatives.

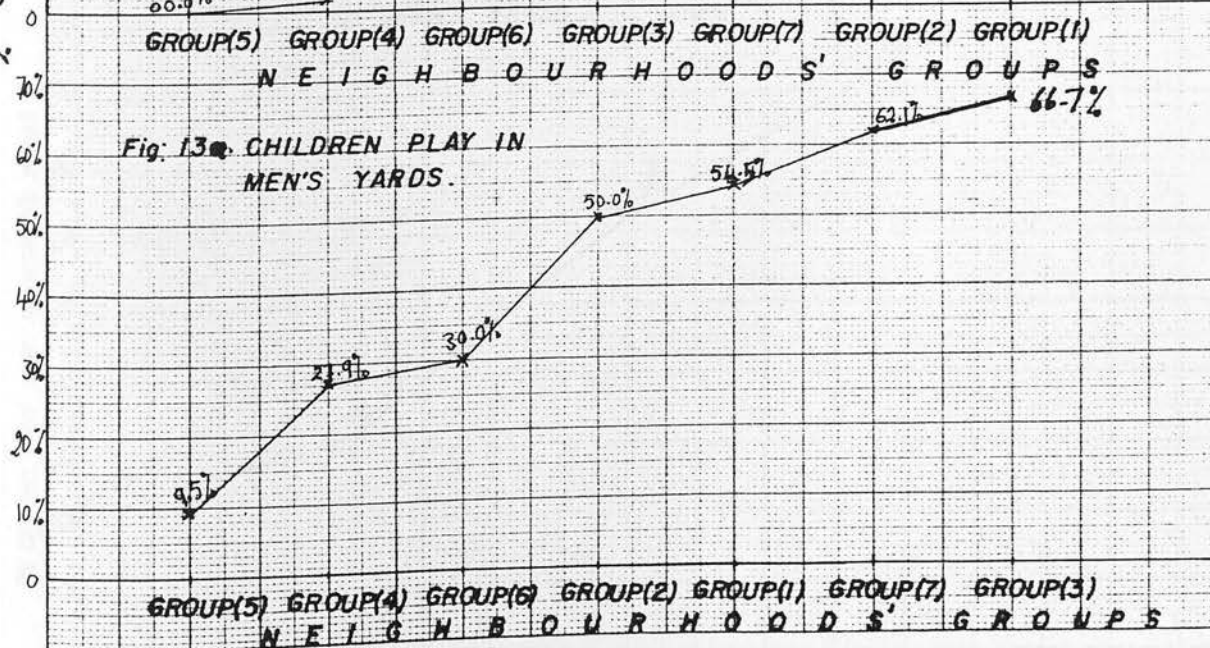
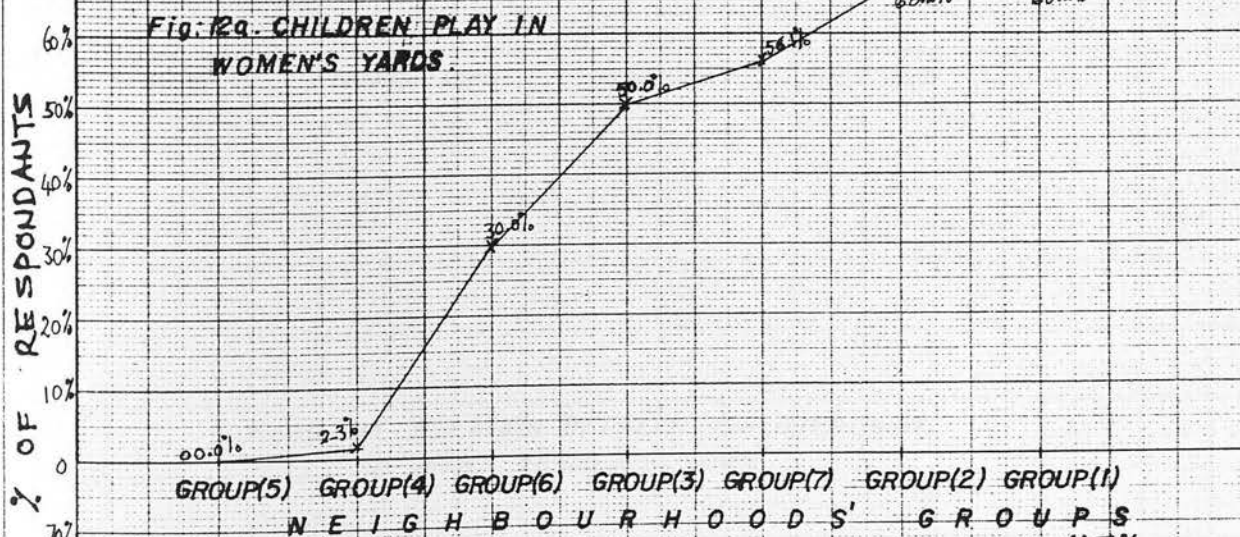
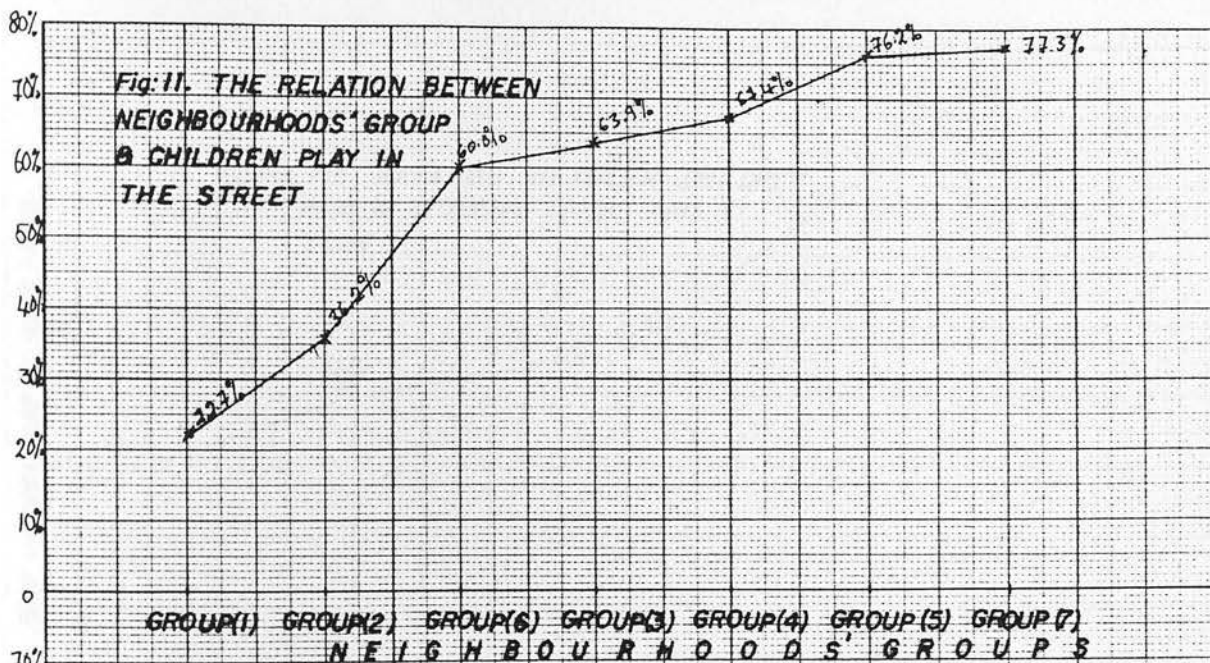
However, residents in the study areas have their own reservations regarding their children's play outside the house. Residents in Tuti do not bother so much about traffic restrictions. Since the narrow alleys "1.8 m max", do not allow vehicles passing through, and only small donkey-carriages have access. In Khartoum, Khartoum North and Umdorman, more than 50% of respondents were worried about traffic accidents, since the street is the main area for children playing. In Umdorman residents are more concerned, due to the narrow alleys which are used by traffic and for children's playing.¹⁷

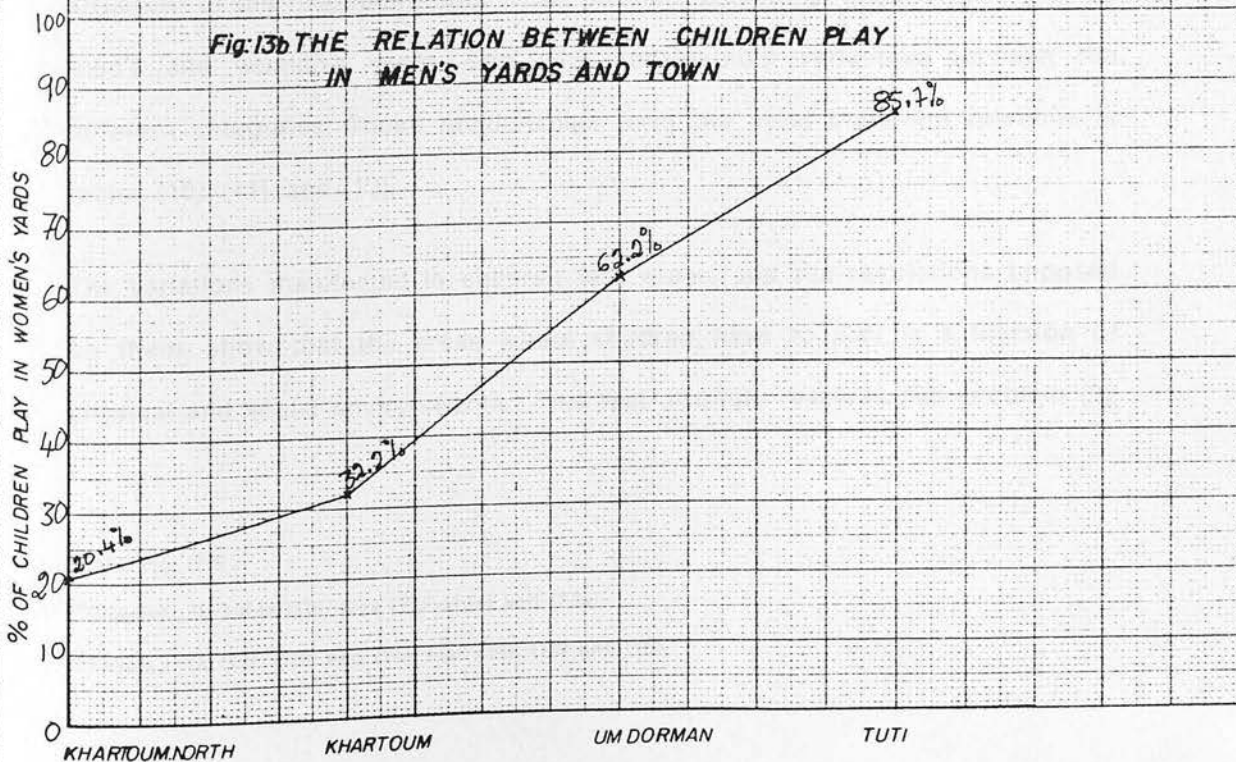
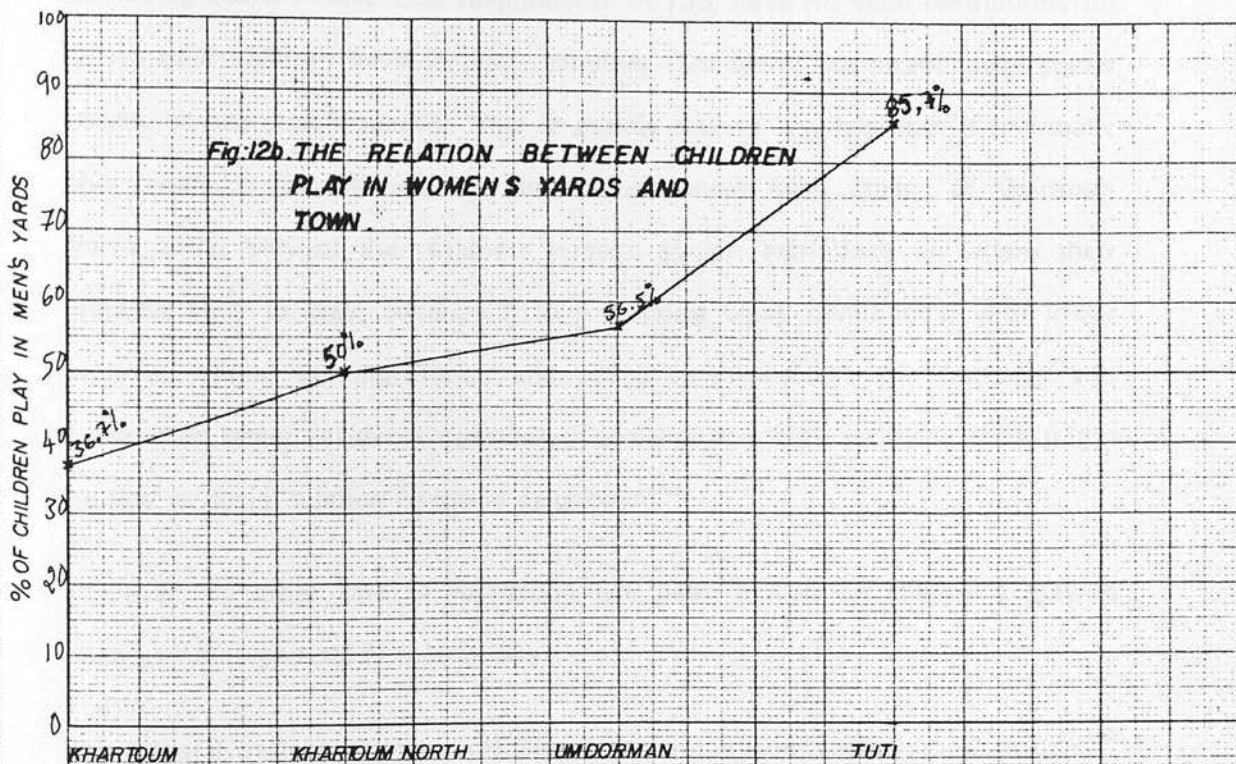
TABLE (9): Shows the four study areas, and restrictions imposed on children playing areas

Study Area	Accident Restriction	Social Restriction	Study/noise Restriction	No Restriction
Khartoum	(49) 54.4%	(28) 31.1%	(12) 13/3%	(18) 20.0%
Umdorman	(44) 63.8%	(27) 39.1%	(16) 23.2%	(15) 21.7%
Khartoum North	(31) 57.4%	(27) 50.0%	(7) 13.0%	(7) 13.0%
Tuti	(1) 14.3%	(0) 0.0%	(2) 28.6%	(3) 42.9%

¹⁷Table (9)







Regarding social restrictions, respondents in Tuti, have no such restrictions on where their children have to play. Whether that be in the street, neighbour's house, or near open spaces. This is mainly due to the fact that it is tribally and clannishly homogeneous, where people know each other. In Khartoum North about 50% of the residents impose social restrictions on where their children have to play, because it is a working class community, with lower income, longer working hours, and some redundancies. In Khartoum and Umdorman fewer residents considered social restrictions seriously. This might be due to social relation between neighbours.¹⁸

However, no other kind of restriction has been placed on children's playing such as noise and study restrictions.

The general pattern of children's play areas among neighbourhoods' groups¹⁹ and socio-economic groups²⁰ has not changed very much from the previous paragraphs. In all these categories the street is found to be the main playing area. The variations between those categories, are due to traffic, the street's micro-climate, availability of yards within a house, age of children and social structure of the neighbourhood. Other possible places for children play are the men's and women's yards, also with considerable variations between the different categories. Those relationships form the most important relations in tables (10), (11), and (12).

The variations manifested in children play areas, and the restrictions imposed on them, show that the areas where children have to play is a function of physical and social environments. This fact strongly resolves sub-problem (3),

¹⁸Ibid; Fig: (10)

¹⁹Chapter (2); Table (10); Figs (11); (12a) and (13a)

²⁰Tables (11); (12); (13); and (14); Figs (14); (15) and (16)

and supports research issue (3).²¹ If this is the case that such variations could occur due to subtle differences between a culturally homogeneous group, then it is very logical to say that this fact is absolutely in favour of the central assumption of this study, mentioned in Chapter (4).

TABLE (11): Shows the relation between where children play and type of family

Family	Women's yard	Men's yard	Neigh- bour's N.house	Street	Near space	Far space	Villa
Integrated	(43) 51.2%	(41) 48.8%	(28) 33.3%	(60) 71.4%	(12) 14.4%	(15) 17.9%	(1) 1.2%
Nuclear	(62) 50.0%	(48) 38.7%	(46) 37.1%	(78) 62.9%	(9) 7.3%	(23) 18.5%	(3) 2.4%
Bachelor	(0)	(0)	(0)	(0)	(0)	(0)	(0)

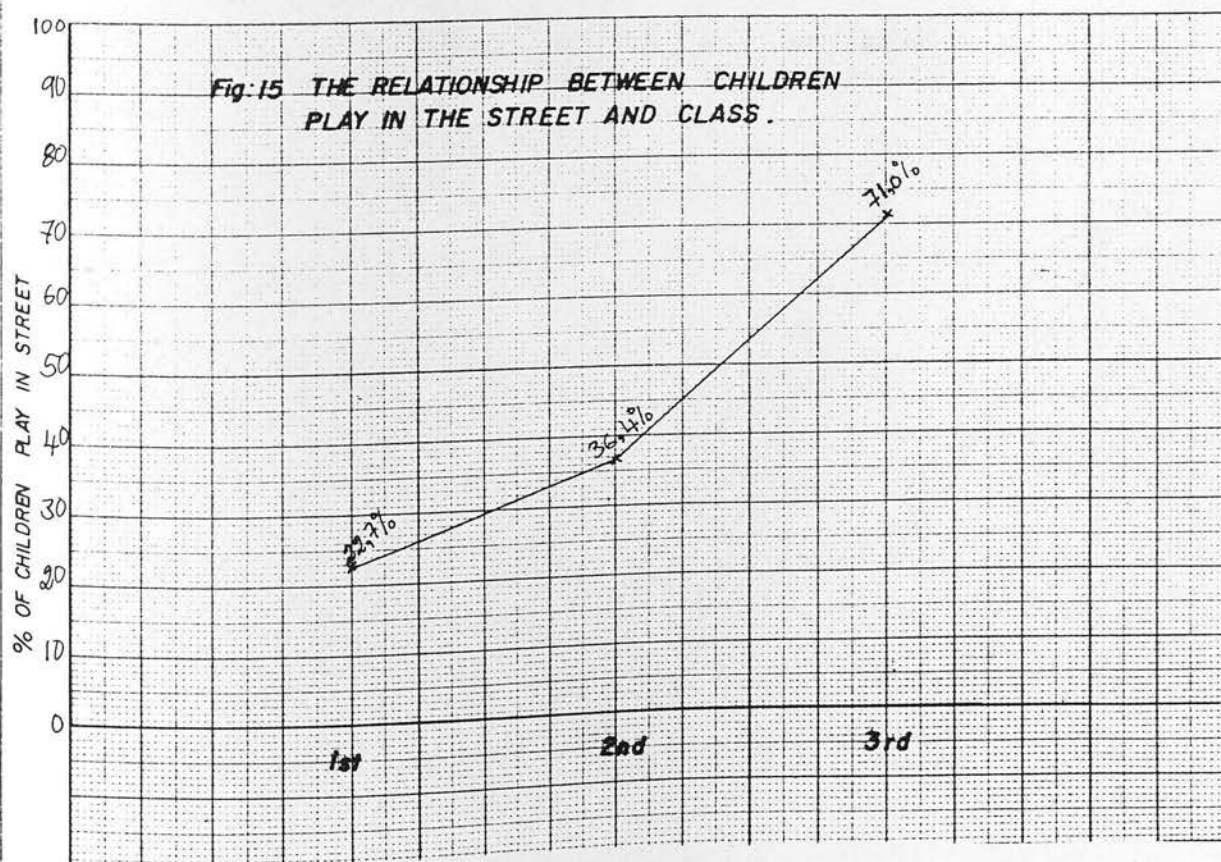
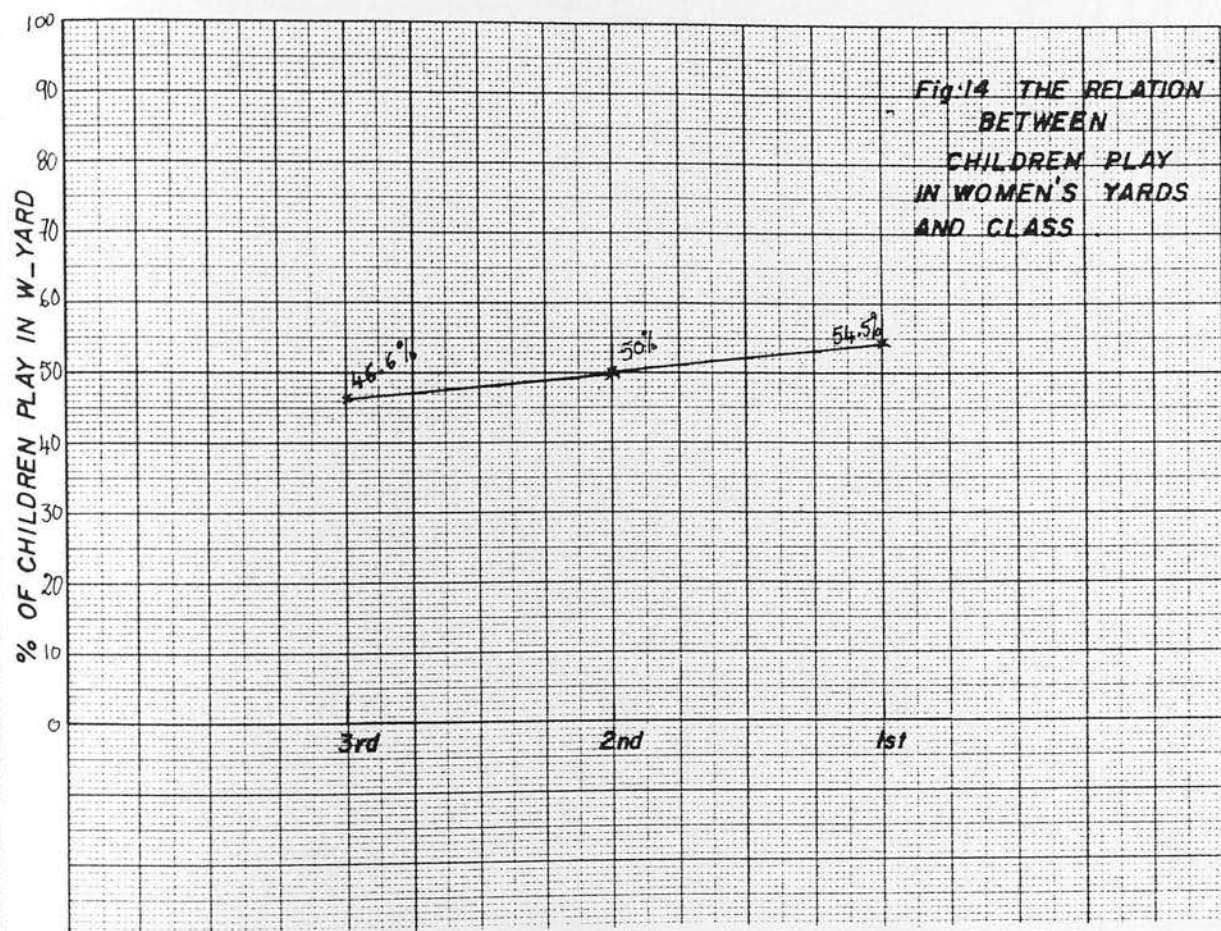
TABLE (12): Shows where children play in relation to the class of the neighbourhood.

Class	Women Yard	Men Yard	Neighbour's Yard	Street	Near space	Far space	Home Village
First	(12) 54.5%	(15) 68.2%	(3) 13/6%	(5) 22.7%	(3) 13.6%	(3) 13.6%	(0) 0.0%
Second	(11) 50.0%	(15) 68.2%	(4) 18.2%	(8) 36.4%	(2) 9.1%	(5) 22.7%	(0) 0.0%
Third	(82) 46.6%	(59) 33.5%	(67) 38.1%	(125) 71.4%	(16) 9.1%	(30) 17.0%	(4) 2.3%

²¹Chapter (9)

Table (10): Shows the relation between neighbourhoods' groups and children playing areas

Neighbourhoods' groups	In womens' yards	In mens' yards	In neighbour's house	In the street	In close open spaces	In far open spaces	Others (Families' house and village)
1	(12) 54.5%	(15) 68.2%	(3) 13.6%	(5) 22.7%	(3) 13.6%	(3) 13.6%	(0) 0.0%
2	(11) 50.0%	(15) 68.2%	(4) 18.2%	(8) 36.4%	(2) 9.1%	(5) 22.7%	(0) 0.0%
3	(24) 66.7%	(18) 50.0%	(14) 39.9%	(23) 63.9%	(5) 13.9%	(5) 13.9%	(0) 0.0%
4	(12) 27.9%	(1) 2.3%	(12) 27.9%	(29) 67.4%	(3) 7.0%	(6) 14.0%	(0) 0.0%
5	(2) 9.5%	(0) 0.0%	(8) 38.1%	(16) 76.2%	(1) 4.8%	(1) 4.8%	(0) 0.0%
6	(3) 30.0%	(3) 30.0%	(2) 20.0%	(6) 60.0%	(0) 0.0%	(1) 10.0%	(0) 0.0%
7	(41) 62.1%	(37) 56.1%	(31) 47.0%	(51) 77.3%	(7) 10.6%	(17) 10.6%	(4) 6.1%



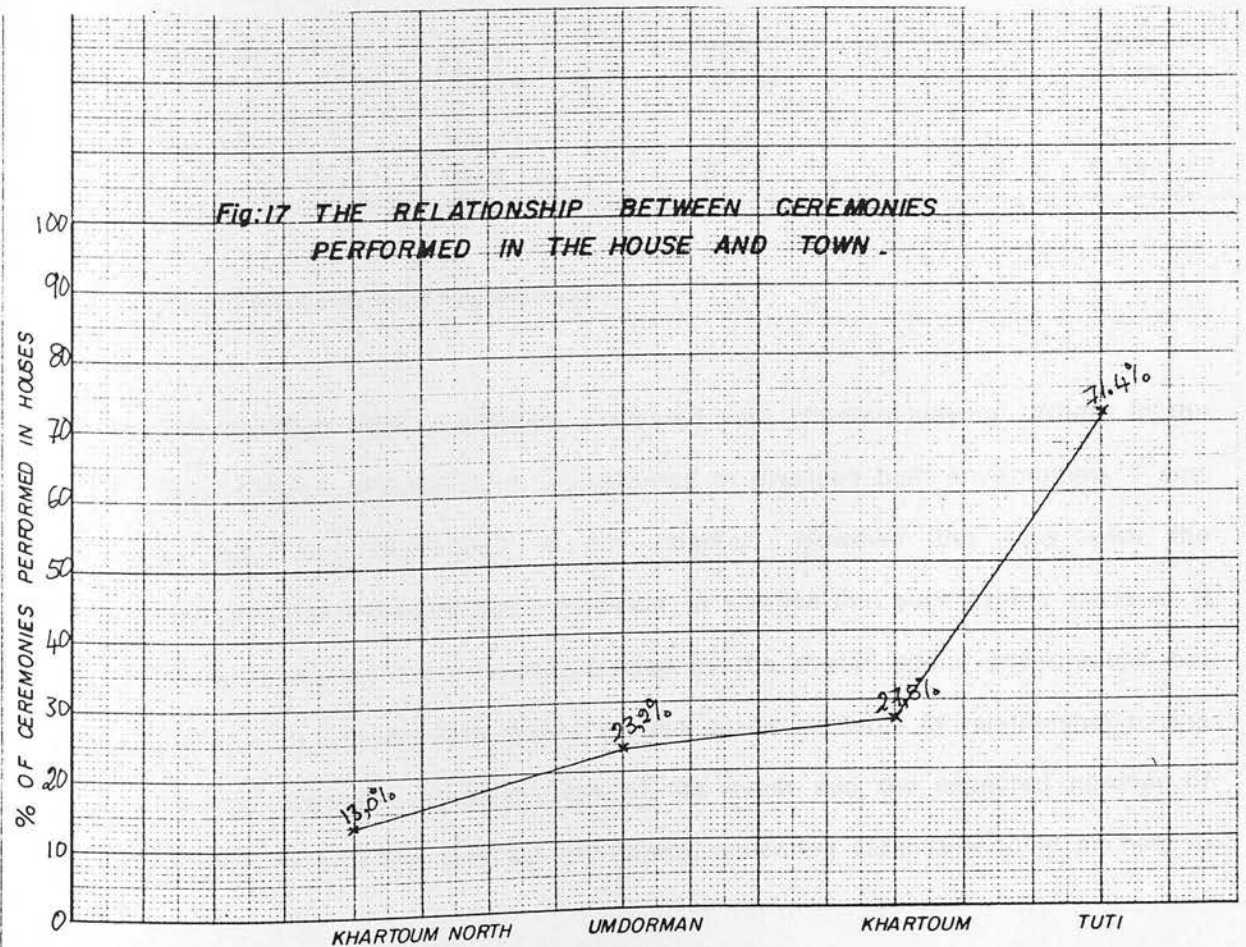
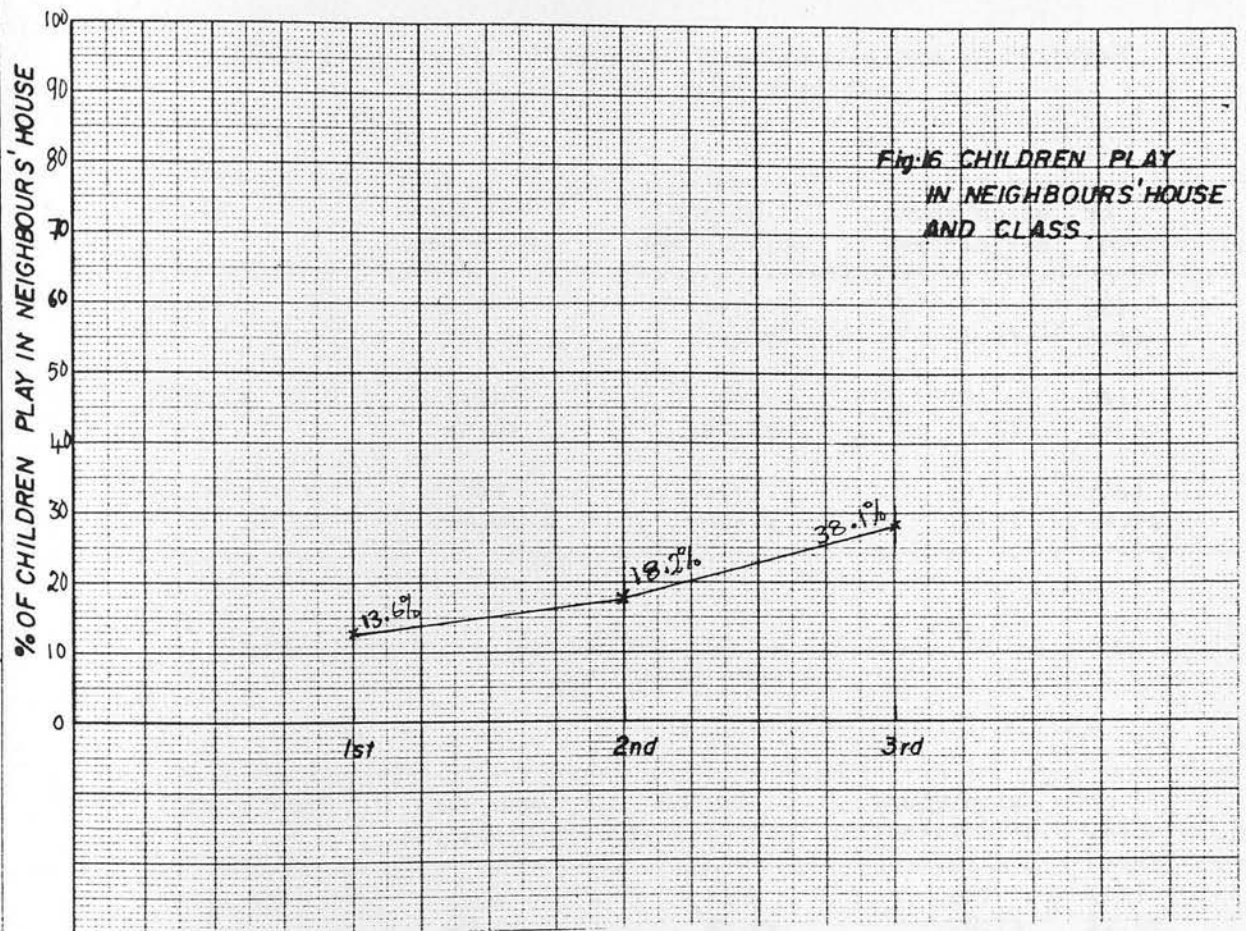


TABLE (13): Shows the classes, and restrictions on children playing areas among families.

Class	Accident Restriction	Social Restriction	Study/noise Restriction	No restriction
First	(16) 72.7%	(9) 40.9%	(7) 31.8%	(2) 9.1%
Second	(11) 50.0%	(8) 36.4%	(3) 13.6%	(6) 27.3%
Third	(98) 55.7%	(65) 36.9%	(27) 15.3%	(35) 19.9%

TABLE (14): Shows the restrictions on children playing areas and type of family

Family Type	Accident Restriction	Social Restriction	Study/noise Restriction	No restrictions
Integrated	(53) 63.1%	(38) 45.2%	(9) 10.7%	(19) 22.6%
Nuclear	(72) 58.1%	(44) 35.5%	(28) 22.6%	(24) 19.4%
Bachelor	(0) 0.0%	(0) 0.0%	(0) 0.0%	(0) 0.0%

5.3.3. Performance of Ceremonies

The situation here is different compared with children playing. Where in the first instance, children were accustomed to previous built environment, if any, as has been mentioned in this chapter. However the case with the performance of ceremonies is different, in a sense that such events are rare. It is not a day to day activity, bounded by the overall social environment, but purely a family decision, based on the space available in relationship to the family's economic situation, type of the event and the expected number of guests. This means that, for one family, a naming ceremony could be held in

the house, or neighbour's house, because of the limited number of guests. For the same family, a marriage ceremony could be held in the street, or nearby open space if any.

Very few residents in the main cities can afford to perform their ceremonies in the house. That is only limited to first class and in some cases second class areas. However, the majority of Tuti's residents do perform their ceremonies inside the houses²² due to the large plots they have managed to allocate for themselves, or farm lands which have been converted to residential lands. This is in spite of the area being considered a third class one.

Generally respondents in the four study areas do not resort to a neighbour's house to perform their ceremonies.²³ In Khartoum and Khartoum North the use of a neighbour's house for ceremonies is due to similarity of plots sizes; standardisation, which in turn is due to the grid-iron system. But in Umdorman and Tuti, the situation is rather different. Some residents have got large plots, as has been mentioned above, the streets are narrow, and a tribal homogeneity is manifested.

The small plot areas, wider streets, and large number of invited audiences, 500 – 2500 together have compelled residents in Khartoum, Umdorman and Khartoum North to perform ceremonies in the streets. In Tuti, the problem is rather different where there are very narrow alleys, 0.80 – 1.8m, large plots in some cases, and large open spaces between houses left blank for such purposes.²⁴ Although such spaces have been provided for in Khartoum, Khartoum North and the new parts of Umdorman, residents do not utilise them

²² Table (15), Fig: (17)

²³ Table (15); Fig:(18)

²⁴ Table (15); Fig: (21)

for such purposes, due to the fact that people do not feel comfortable with them.

Residents do not use social clubs, family houses in other cities or home villages, either for economic reasons or distance, unless they want to exhibit their wealth, or show social and clannish solidarity.

There are very strong, systematic and significant relationships between neighbourhoods' groups²⁵ and ceremonies being performed in houses, in neighbour's houses, in the street, and in social clubs²⁶ which means that there are variations regarding the response of the groups to a specific space, and its suitability to a specific ceremony performance.

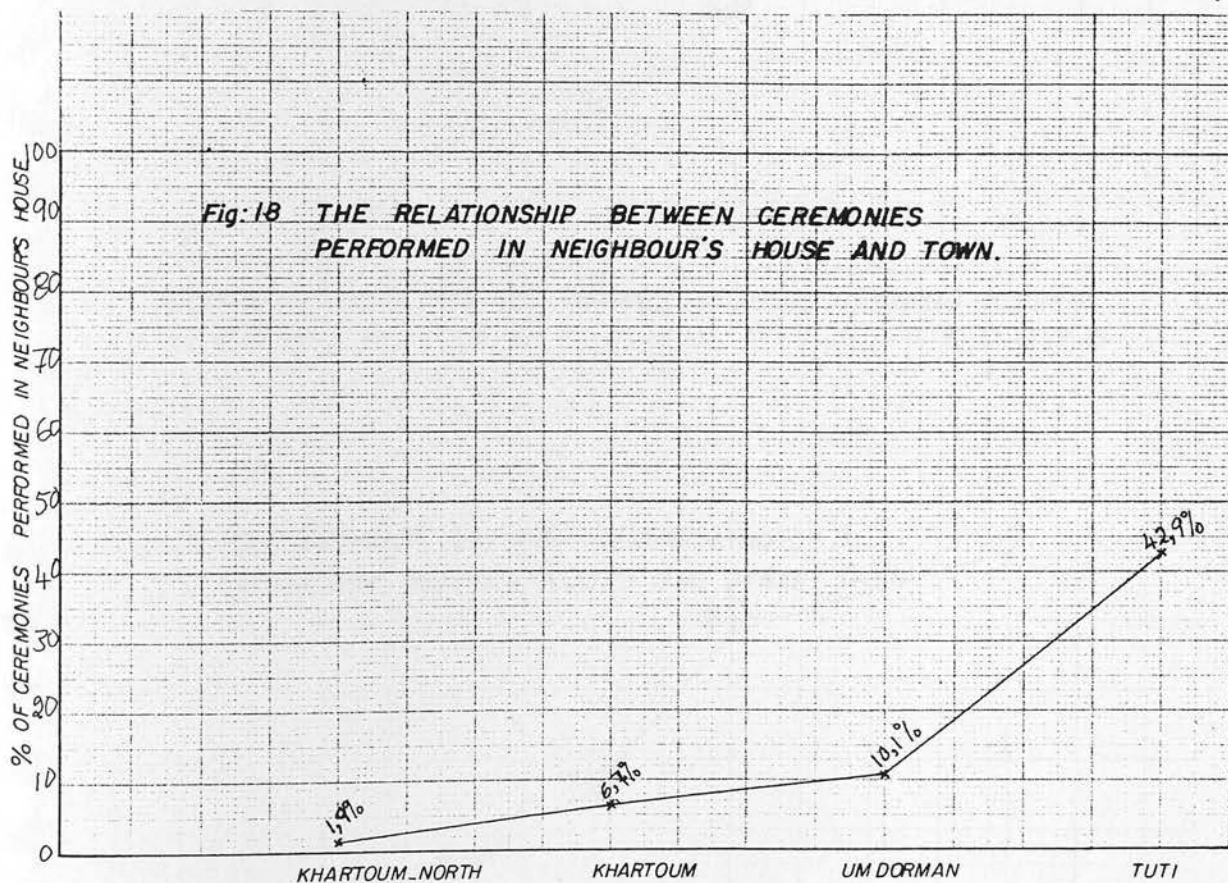
Certain conclusions could be drawn from the relationship between neighbours groups and socio-economic groups²⁷ with the performance of ceremonies:

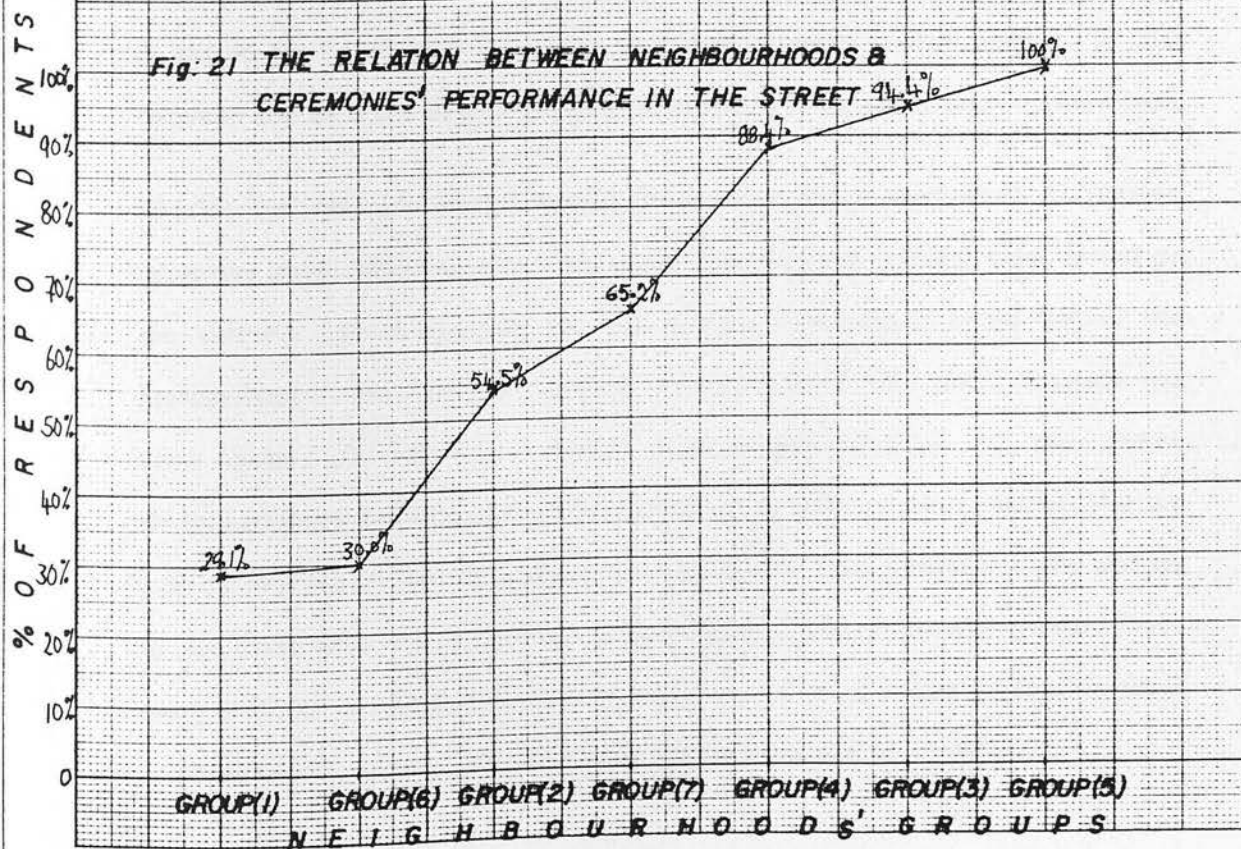
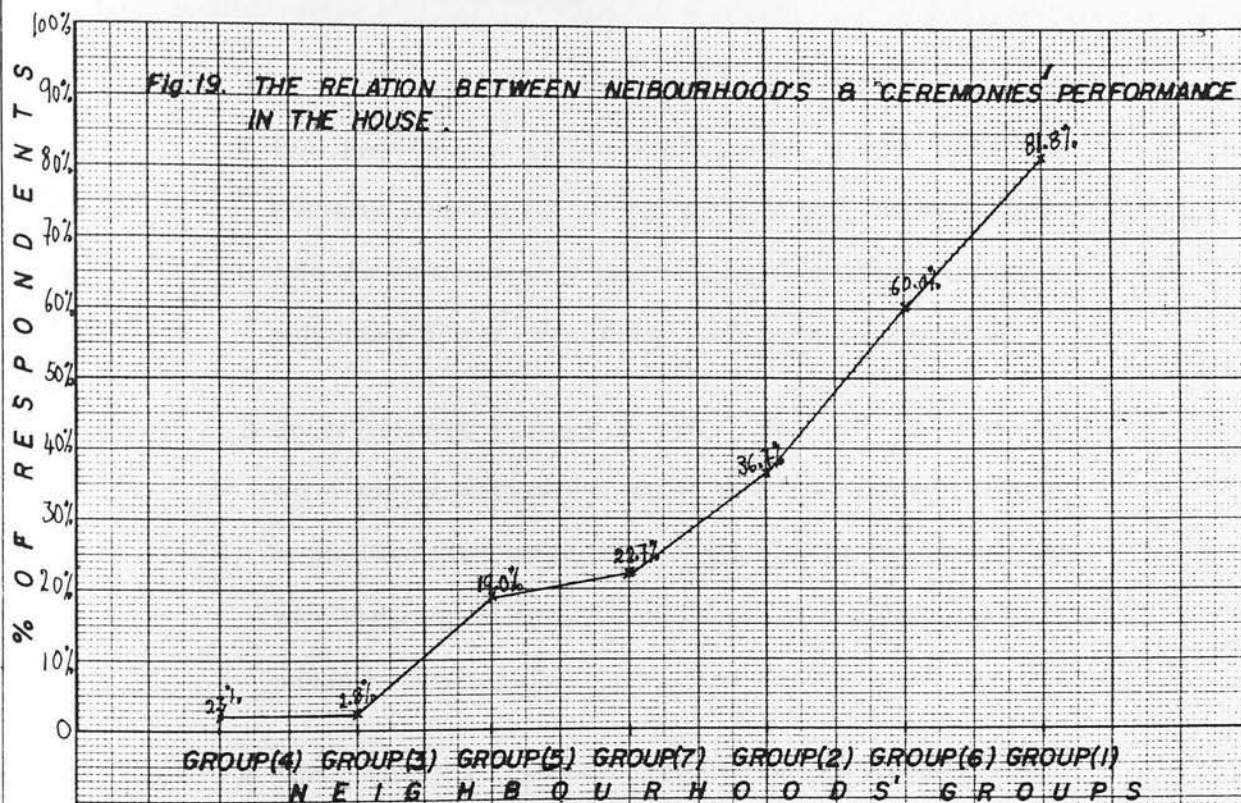
1. The whereabouts of the performance of an event is largely dependant on the following factors:
 - a. The space available
 - b. The type of event
 - c. The number of guests
 - d. The socio-economic standard of a family or families
 - e. Regional background and duration of residence in

²⁵Figs: (19); (20); (21); (22)

²⁶Chapter (2); Table (17)

²⁷Table (15); Figs (23); (24) and (25)





Khartoum area.

2. The performance of the ceremonies in the street is inversely proportional to the class of the neighbourhood. Also the performance of ceremonies in the house is directly propotional to the class of the neighbourhood (plot size).
3. Upper classes' residents, have not got a sort of socio-spatial relationship, which is a characteristic feature in the third class areas. This kind of relationship has a very wide spectrum of mutual needs from the tiny daily needs to multiple spatial needs.
4. Some nuclear and bachelor families have maintained a sort of socio-economic and spatial needs relationships with their main families and home village in Khartoum area.

It should be noted that the most important relation in this context, is that between the different categories and ceremonies being performed in the street.

Besides the obvious reason behind ceremonies being performed in houses, (spacious plot), other reasons have been given to each specific case, based on the author's own experience, i.e., the street's narrowness, being behind the performance in the near open spaces, as the case of Tuti. Lack of space has been given as the main reason behind performances in the street. Socio-economic reasons, behind performances in clubs, because those who are well off and live in low class areas, seek to exhibit their wealth in clubs and try to get away from the miserable surroundings. Socio-economic reasons have been given as an answer to performances in a family's house in another town or home village, as the case of nuclear families, bachelors, or tenants.

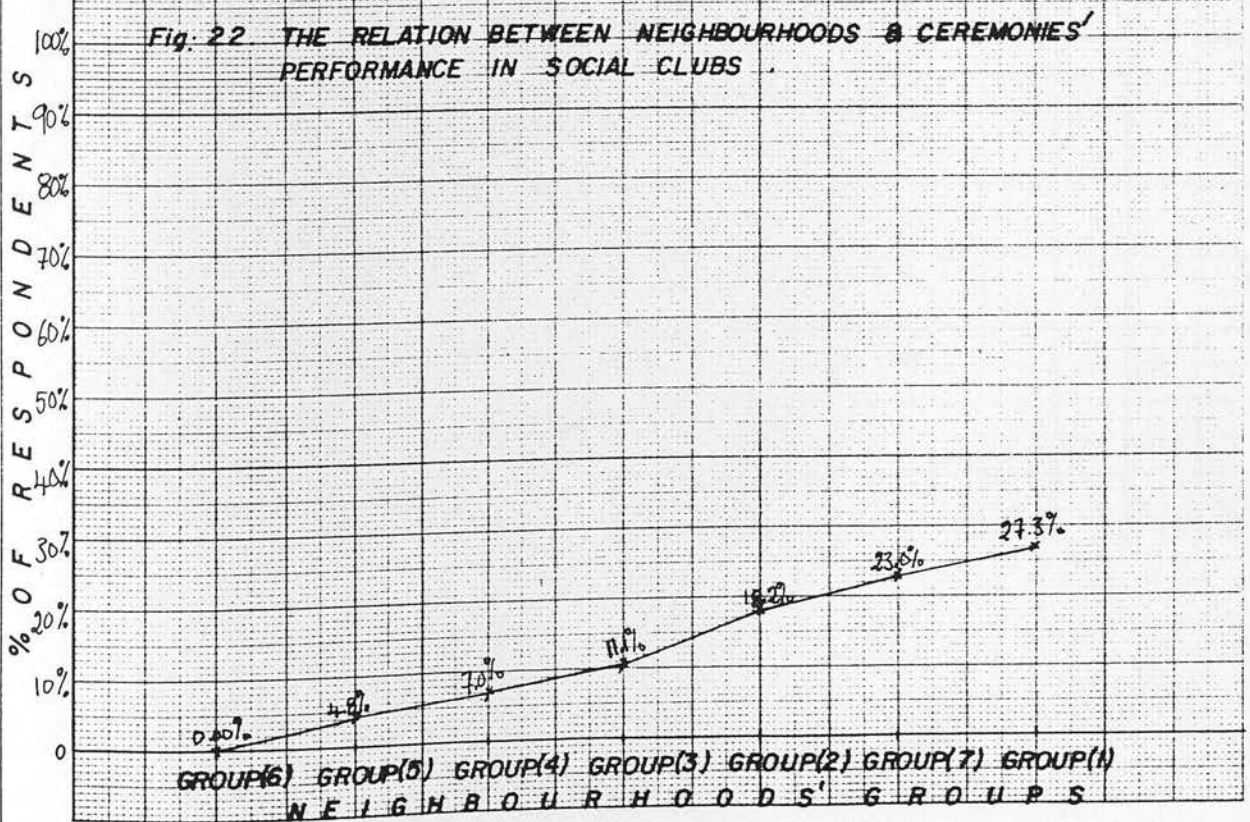
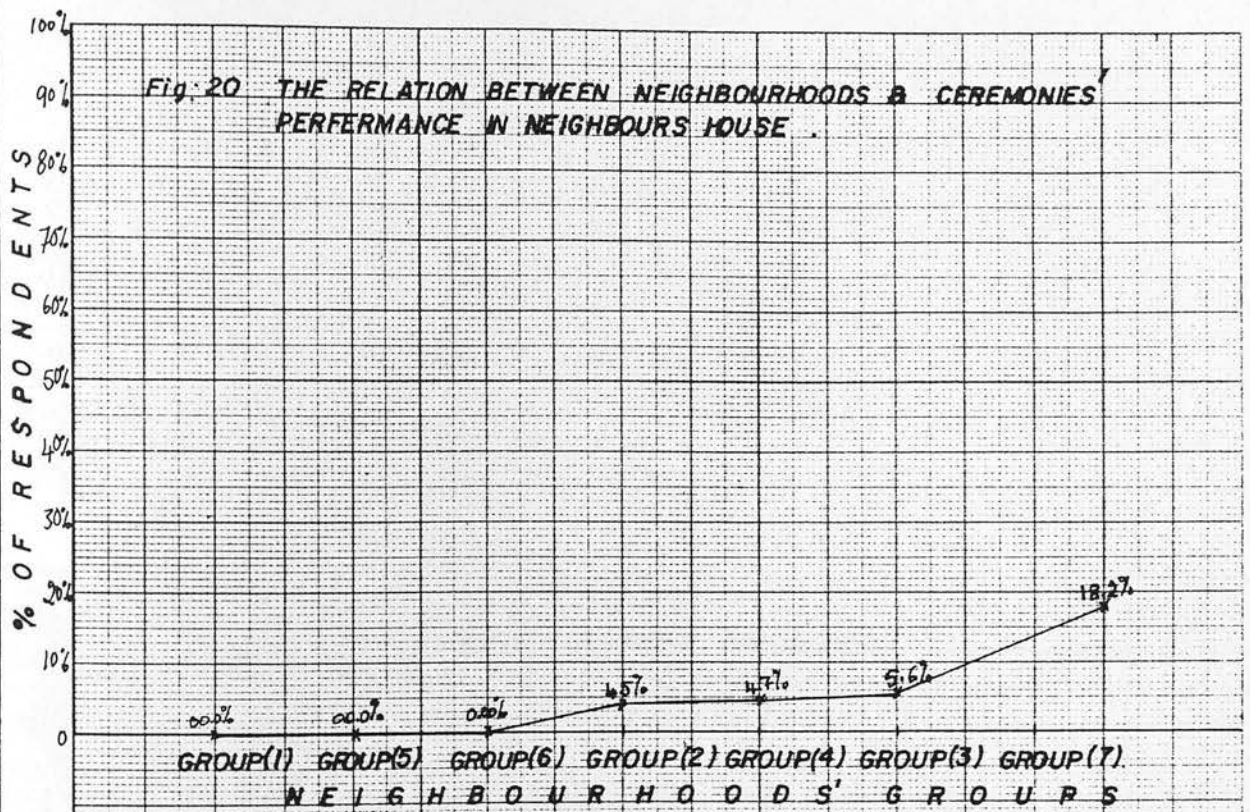
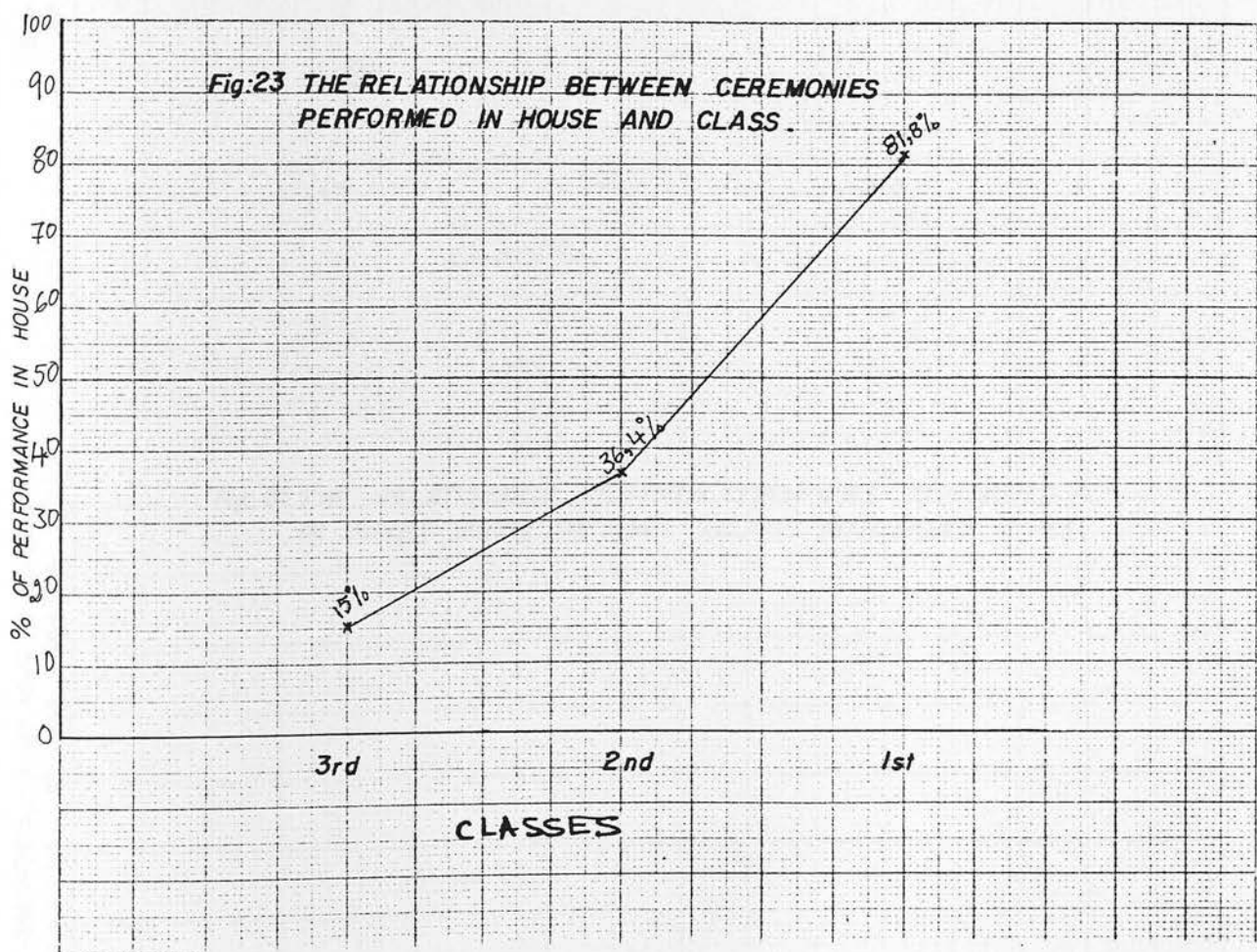


Fig:23 THE RELATIONSHIP BETWEEN CEREMONIES
PERFORMED IN HOUSE AND CLASS.



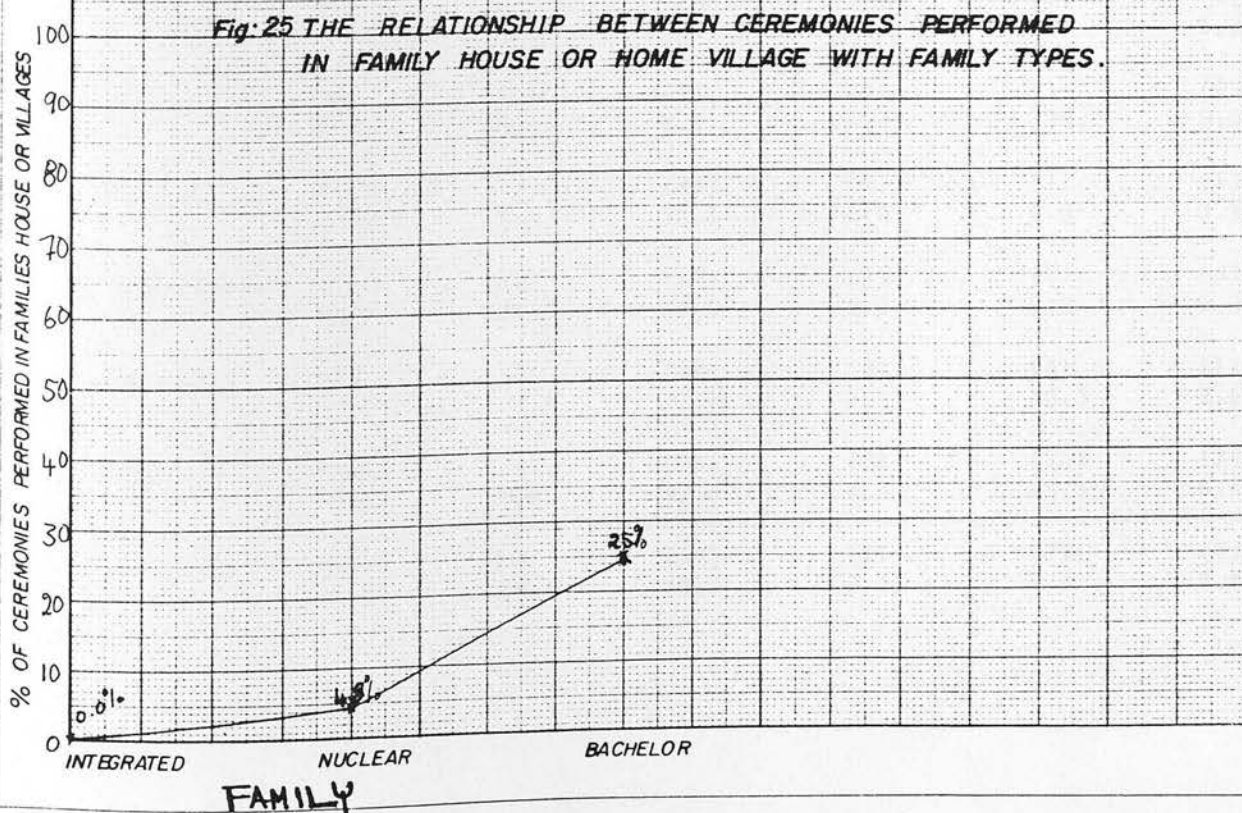
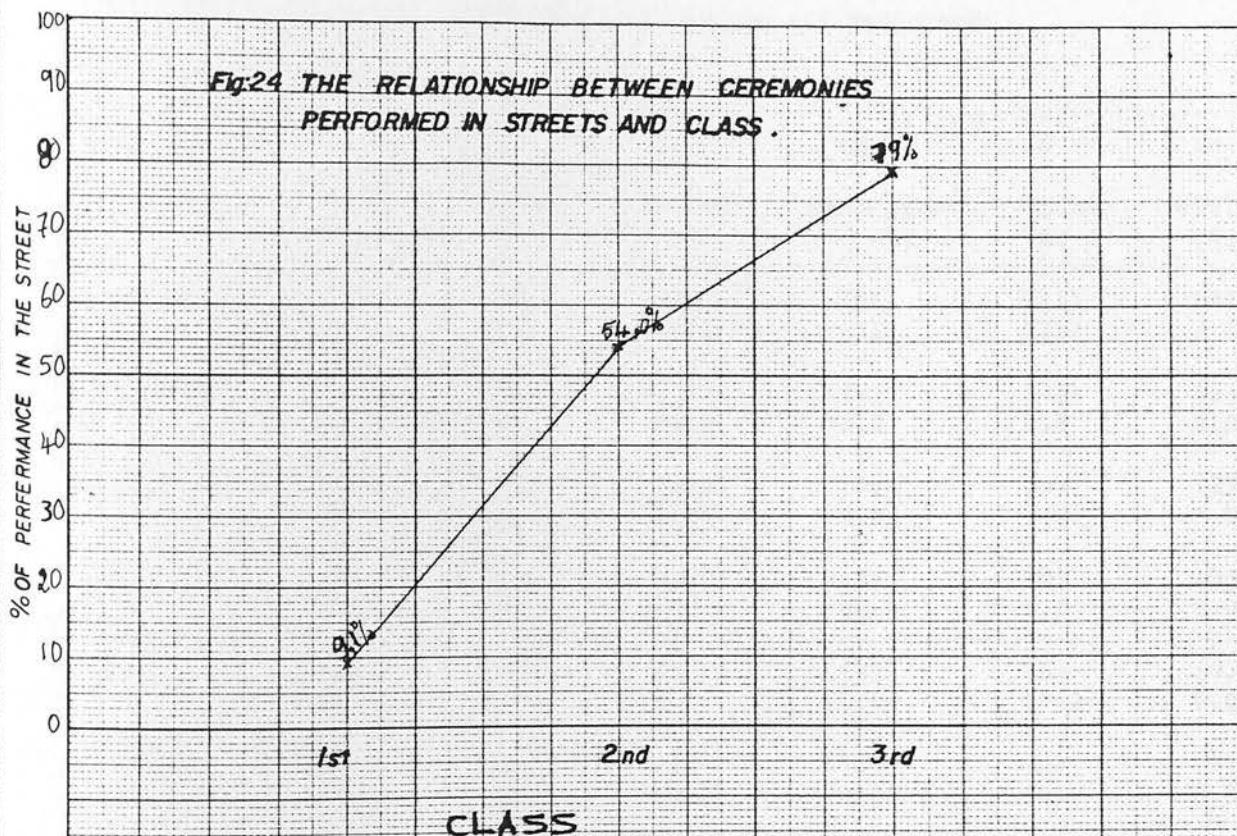


TABLE (15): Shows where ceremonies are performed

	In House (%)	In Neighbour's House (%)	In Street (%)	In Open Space (%)	In Clubs (%)	In Village (%)
Khartoum	(25) 27.8	(6) 6.7	(64) 71.1	(1) 1.1	(11) 12.2	(3) 3.3
Umdorman	(16) 23.2	(7) 10.1	(48) 69.9	(0) 0.0	(4) 5.8	(3) 4.3
Khartoum N.	(7) 13.0	(1) 1.9	(41) 75.9	(0) 0.0	(5) 9.3	(3) 5.6
Tuti	(5) 71.4	(3) 42.9	(0) 0.0	(3) 42.9	(0) 0.0	(0) 0.0
First	(18) 81.8	(0) 0.0	(2) 9.1	(0) 0.0	(6) 27.3	(0) 0.0
Second	(18) 36.4	(0) 4.5	(2) 54.0	(0) 0.0	(4) 18.2	(0) 0.0
Third	(27) 15.3	(16) 9.1	(139) 79.0	(4) (4)	(10) (10)	(9) 5.1
Illiterate	(6) 18.2	(1) 3.0	(26) 78.8	(0) 0.0	(1) 3.0	(2) 6.1
Religious	(5) 26.3	(1) 9.3	(14) 73.7	(0) 0.0	(1) 5.3	(0) 5.3
Adult	(0) 0.0	(0) 0.0	(0) 0.0	(0) 0.0	(1) 100.0	(0) 0.0
Primary	(10) 17.9	(2) 3.6	(46) 82.1	(0) 0.0	(1) 1.8	(2) 3.6
Intermediate	(3) 12.0	(6) 24.0	(19) 76.0	(1) 4.0	(0) 0.0	(0) 0.0
Secondary	(7) 17.9	(7) 17.9	(28) 71.8	(3) 7.7	(4) 10.3	(1) 2.6
Graduate	(22) 46.8	(0) 0.0	(20) 42.6	(0) 0.0	(12) 25.5	(3) 6.4
Integrated	(21) 25.0	(9) 10.7	(59) 70.2	(2) 2.4	(7) 8.3	(0) 0.0

Nuclear	(30) 24.2	(8) 6.5	(85) 68.5	(2) 1.6	(13) 10.5	(6) 4.8
Bachelor	(2) 16.7	(0) 0.0	(9) 75.0	(0) 0.0	(0) 0.0	(3) 25.0
Housewife	(5) 29.2	(1) 5.9	(11) 64.7	(0) 0.0	(2) 11.8	(1) 5.9
S. Employee	(15) 29.2	(1) 5.0	(11) 20.0	(0) 0.0	(2) 20.0	(1) 5.0
J. Employee	(15) 18.1	(12) 14.5	(61) 73.5	(3) 3.6	(7) 8.4	(2) 2.4
Private Business	(5) 71.4	(0) 0.0	(1) 14.0	(0) 0.0	(3) 42.9	(0) 0.0
Worker	(9) 11.5	(2) 2.6	(65) 83.3	(0) 0.0	(4) 5.1	(5) 6.4
Retired	(4) 26.7	(1) 6.7	(11) 73.3	(1) 6.7	(0) 0.0	(0) 0.0
Tenure	(34) 26.4	(12) 9.3	(92) 71.3	(3) 2.3	(11) 8.5	(2) 1.6
Tenant	(19)	(5)	(61)	(1)	(9)	(7)

5.3.4. Leisure Time and Misbehavior

The majority of respondents spend their leisure time at home reading, watching T.V., listening to radio, doing home work, relaxing etc., or in recreation, such as entertaining guests, socialisation, visiting relatives, etc.,²⁸ The degree of staying at home or recreating differs and varies between towns. These are the most important relation regarding leisure time and towns. However there are very strong, systematic and significant relationships between towns and the leisure time being spent at home and in recreation.²⁹ This will further support the notion that since Khartoum has got comparatively more recreational facilities

²⁸Table (17)

²⁹Figs: (26)

Table (16): Shows the relation between neighbourhoods' groups and performance of ceremonies

Neighbourhoods groups	In the house	In neighbour's house	In the street	In near open space	In social clubs	Others (Family's home or village
1	(18) 81.8%	(0) 0.0%	(2) 9.1%	(0) 0.0%	(6) 27.3%	(0) 0.0%
2	(8) 36.4%	(1) 4.5%	(12) 54.5%	(0) 0.0%	(4) 18.2%	(0) 0.0%
3	(1) 2.8%	(2) 5.6%	(34) 94.4%	(1) 2.8%	(4) 11.1%	(1) 2.8%
4	(1) 2.3%	(2) 4.7%	(38) 88.4%	(0) 0.0%	(3) 7.0%	(3) 7.0%
5	(4) 19.0%	(0) 0.0%	(21) 100.0%	(0) 0.0%	(1) 4.8%	(0) 10.0%
6	(6) 60.0%	(0) 0.0%	(3) 30.0%	(0) 0.0%	(0) 0.0%	(1) 0.0%
7	(15) 22.7%	(12) 18.2%	(43) 65.2%	(3) 4.5%	(2) 3.0%	(4) 6.1%

than other towns its residents are less fond of public park visits for one reason or another, and vice versa. Since the majority of respondents in all study areas spend their leisure time at home, it means either that, public park provision does not match the growing population, Or that irrespective of the limited parks resources, there is a negative attitude towards spending leisure time in public parks.

Table (17): Shows relation between town and leisure time

Town	Leisure at home		Leisure in Recreation		Others	
Khartoum	(78)	(86.7%)	(69)	(76.7%)	(13)	(14.4%)
Umdorman	(66)	(95.7%)	(67)	(97.1%)	(14)	(20.3%)
Khartoum North	(54)	(100.0%)	(52)	(96.3%)	(7)	(13.0%)
Tuti	(7)	(100.0%)	(7)	(100.0%)	(0)	(0.0%)

So according to the interpretation of the data, the planning pattern of Khartoum, the facilities provided, (i.e., public parks and their concomitant facilities), have contributed to produce less recreational behaviour of its residents compared with the residents of Umdorman, Khartoum North and Tuti.³⁰ In reality such recreational behaviour could be seen as positive or negative, depending on the arrangements of these facilities within the individual parks.³¹ Although the majority of respondents in all study areas spend most of their leisure time in recreation, it seems that all of them do not accept misbehaviour – drinking alcohol, gambling and courtship, as they perceive them in public parks and public areas. In other words they will give up the

³⁰Table (17)

³¹Table (18)

recreation pursuit in such areas, if such misbehaviour persist in public parks. This notion of keeping families away from such areas is widely supported by the fact that families seldom go to such parks.

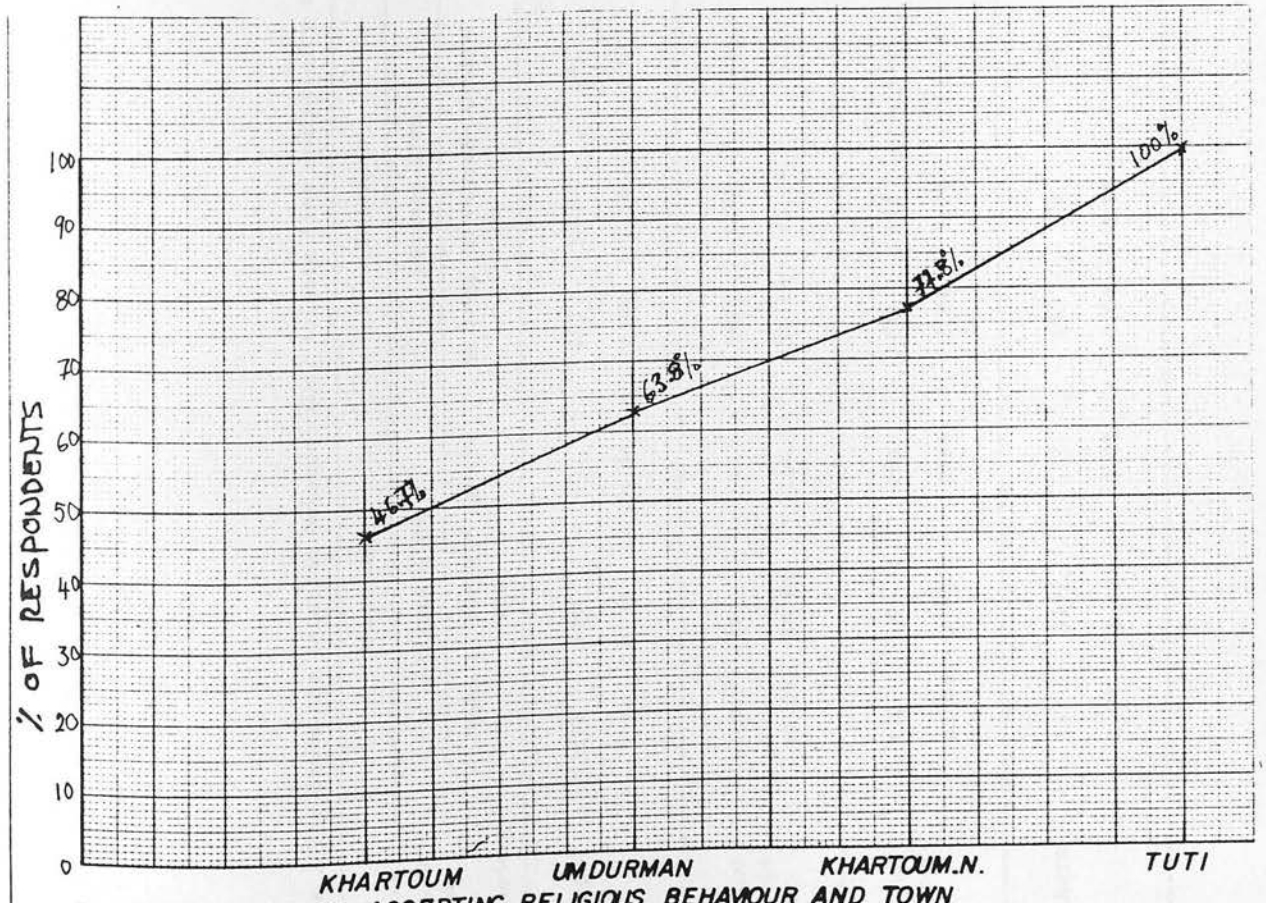
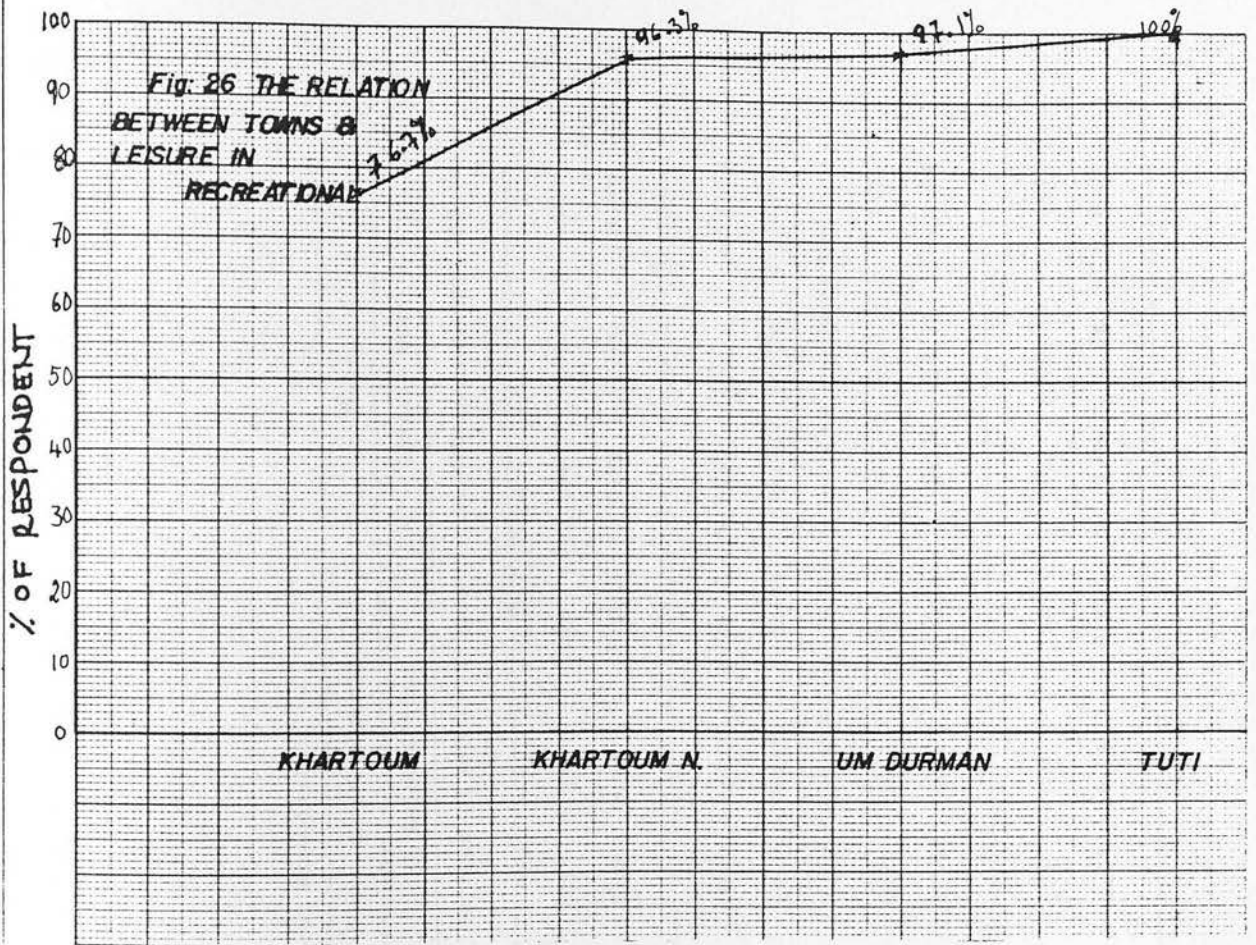
Based on this fact there is a mutual relationship between a specific behaviour-setting (park), and people, which is well explained by the social-exchange theory.³² It is a helpful framework for analysing the selection of settings by persons and the selection of persons by settings.

Although it is out with scope of this study, since the author has used other means of social survey,³³ it is useful to use it here in this context. However, in its original form, the theory considers the costs and rewards that two people might experience as they interact. It assumed that, when two people are in each other's presence over time they act in ways that provide the greatest common satisfaction. For example, two people might find that playing tennis is satisfying to both of them, whereas dancing or hunting is satisfying to one but not to the other, and thus they would play tennis together more often than they would dance or hunt together.

Social-exchange theory can also be applied to situations in which the two parties are a person and a behaviour setting rather than two people. Consider a person who has entered or is thinking about entering a particular behaviour setting. Suppose we made one list of all the behaviours that the person is capable of doing in the setting and a second list of all the possible events in the setting that could affect the person. If we put all the items in one list in a single file across the top of a sheet of paper and all the items in the other list in a single file down the side of the paper, we could draw a matrix of all the

³²Thibaut and Kelley, 1959

³³Questionnaire and observation



possible combinations of behaviours and setting events.

The escorting of females by males is not common in such areas, despite the fact that very few respondents do not bother about other's misbehaviour in public parks. In this respect residents from Khartoum are the most tolerant of such kind of misbehaviour among other residents which is mainly due to their education standard, experience with other nationalities, and wider views. These factors have contributed significantly to their understanding of others' freedom.

The population structure and the general physical pattern of a specific neighbourhood or town have a serious impact on the residents' play, recreation, social, psychological behaviour and sleeping arrangements, occurring in the public, as well as in the private side of the built environment. In Khartoum for example, where there are some public parks provided, people visit these parks less than residents in other cities do as has been mentioned before despite the constraints facing other cities' residents, e.g., distances and transportation. The dispersing characteristics of the grid planning in Khartoum, and the economic division of neighbourhoods, have a direct impact on residents' weaker social contact, compared with Umdorman, Tuti, and to some degree in Khartoum North, where there is some degree of regional, tribal, clannish or occupational homogeneity, as has been mentioned before.

Generally, public park and places are publicly owned areas. Each society has its own legislation, values and customs, which govern the use of such parks. In the Sudanese case, each individual using these parks, should conform with the code of behaviour practices accepted by the society. If for one reason or another some misbehaviour persists in a specific park, through time people will stop visiting it, in the manner mentioned in the previous paragraphs. When being asked about the kind of behaviour residents would like to see and encourage in public parks, the responses of the majority of them is that they

would like to see accepted social behaviour religious behaviour and accepted recreational behaviour.³⁴ But there are many variations in each kind of behaviour among the study areas,³⁵ due to education, religious stances and personal attitudes. Religious behaviour is covering a wide range of behaviour, from prayers (personal), to the way of talking to others (interaction).

Table (19): Shows response to accepted behaviour and town

Town	Accepted Social behaviour		Religious		Accepted Recreational		Others' (quietness)	
Khartoum	(81)	90.0%	(42)	46.7%	(30)	33.3%	(9)	10.0%
Umdorman	(67)	97.1%	(44)	63.8%	(47)	68.1%	(22)	31.9%
Khartoum North	(53)	98.1%	(42)	77.8%	(23)	42.6%	(21)	38.9%
Tuti	(7)	100.0%	(7)	100.0%	(4)	57.1%	(5)	71.4%

Social behaviour (sexes segregation) is the most accepted behaviour among respondents, since it conforms with the culture doctrine, and most respondents go there anticipating such behaviour. This might be due to the fact that social behaviour is the common accepted factor between all groups, whether they are Muslims or Christians, males or females, young or old, and educated or illiterate. There is a very strong, systematic and significant relationship between religious behaviour in public parks with town.³⁶ In a sense that, the number of respondents who accept such behaviour in such context is increasing with the sequence of towns, "Khartoum, Umdorman, Khartoum North and Tuti". The variation is due to the fact that residents in Khartoum and

³⁴Table (19)

³⁵Figs: (27) and (28)

³⁶Figs: (27) and (29)

Umdorman are more educated than those in Khartoum North and Tuti, as has been mentioned before. Thus they might prefer other kinds of behaviour which suits the context more than the religious behaviour. However, recreational behaviour should not contradict with the religious ones, and individuals are obliged to say their prayers in time, which requires the provision of praying areas, within the public parks as well as a suitable environment.

There is also a very strong relationship between accepted recreational behaviour (that conforms with the culture), in parks with towns, but in a different sequence this time, "Khartoum, Khartoum North, Tuti and Umdorman".³⁷ In other words, there is a link between the planning pattern of the city and whether it provides public parks or not, and whether people require recreational behaviour. The number of respondents who require recreational behaviour increases with the lack or limitation of parks within a specific town.

So religious and accepted social behaviour are the most important relation in Table:(19).

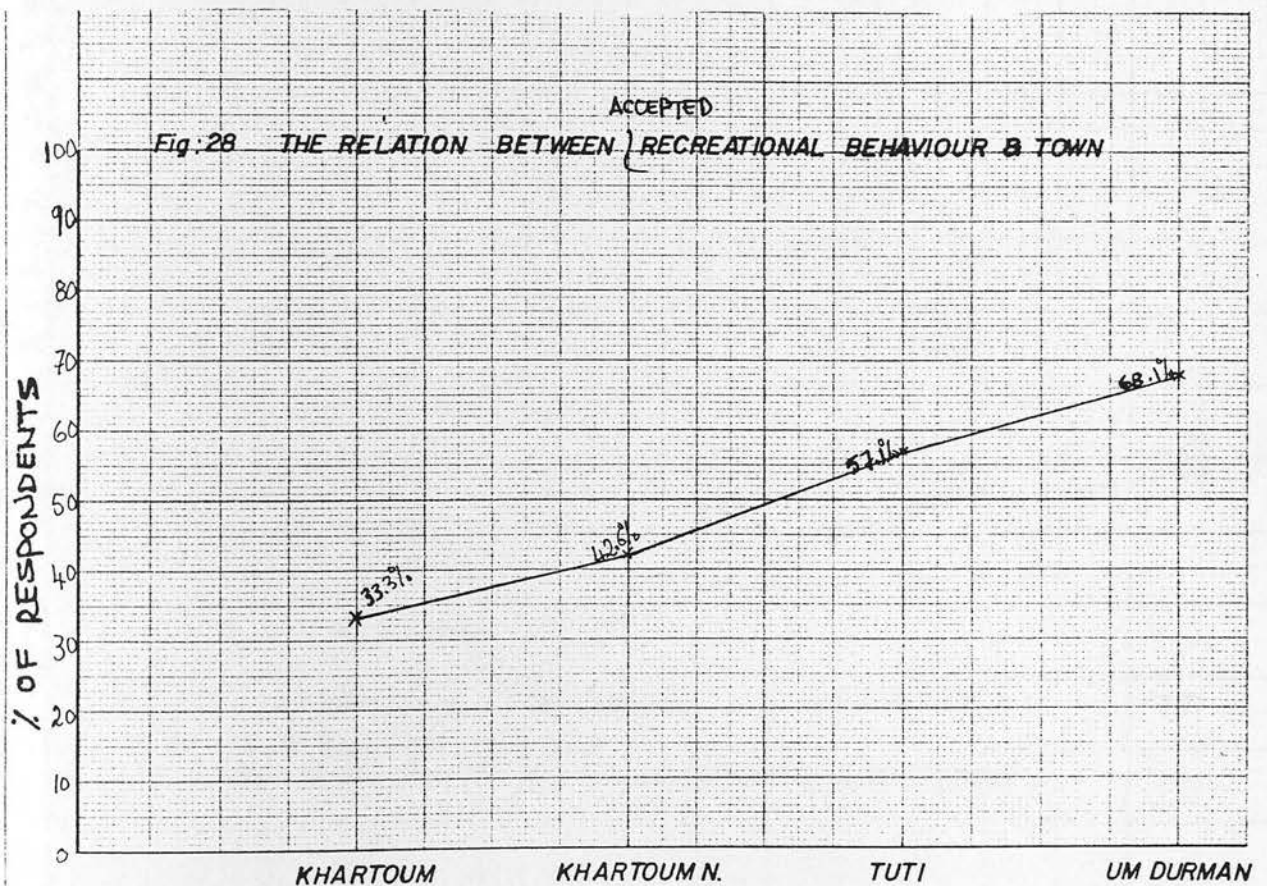
The relationship between people and leisure time, either at home or in recreation, is purely a human behaviour regardless of culture. But what is varying are the kind of activities to be carried on at home and the spaces and facilities provided for that, as well as the timing of each activity, and the length of time it lasts. External recreation also depends on the facilities provided in the surrounding environments, whether it be physical or social.

The neighbourhoods³⁸ and socio-economic's³⁹ groupings analysis has revealed

³⁷Fig: (28)

³⁸Table (21)

³⁹Tables (21); (22); (23); (24); (25); (26); (27) and (28)



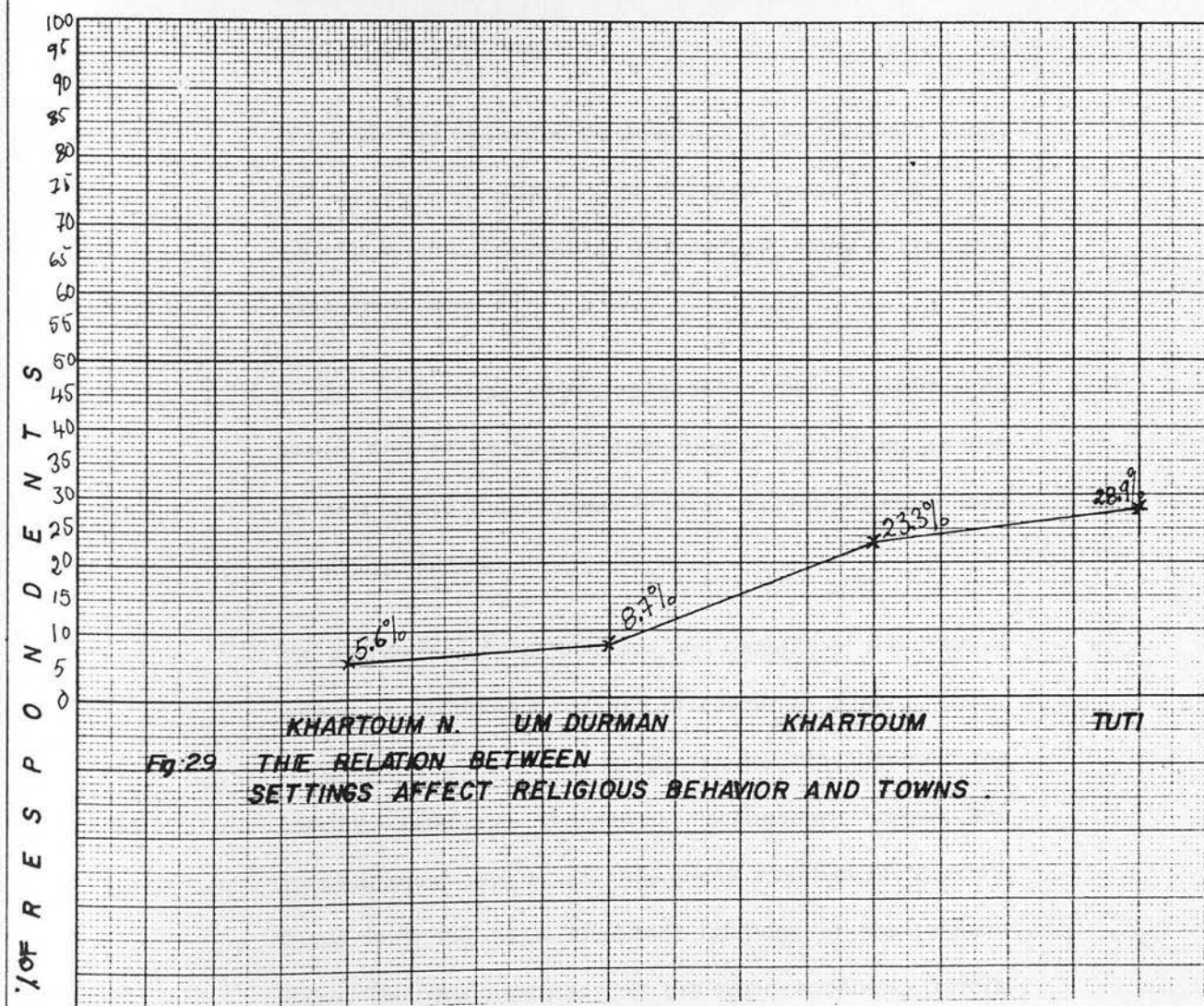


Fig. 29 THE RELATION BETWEEN SETTINGS AFFECT RELIGIOUS BEHAVIOR AND TOWNS .

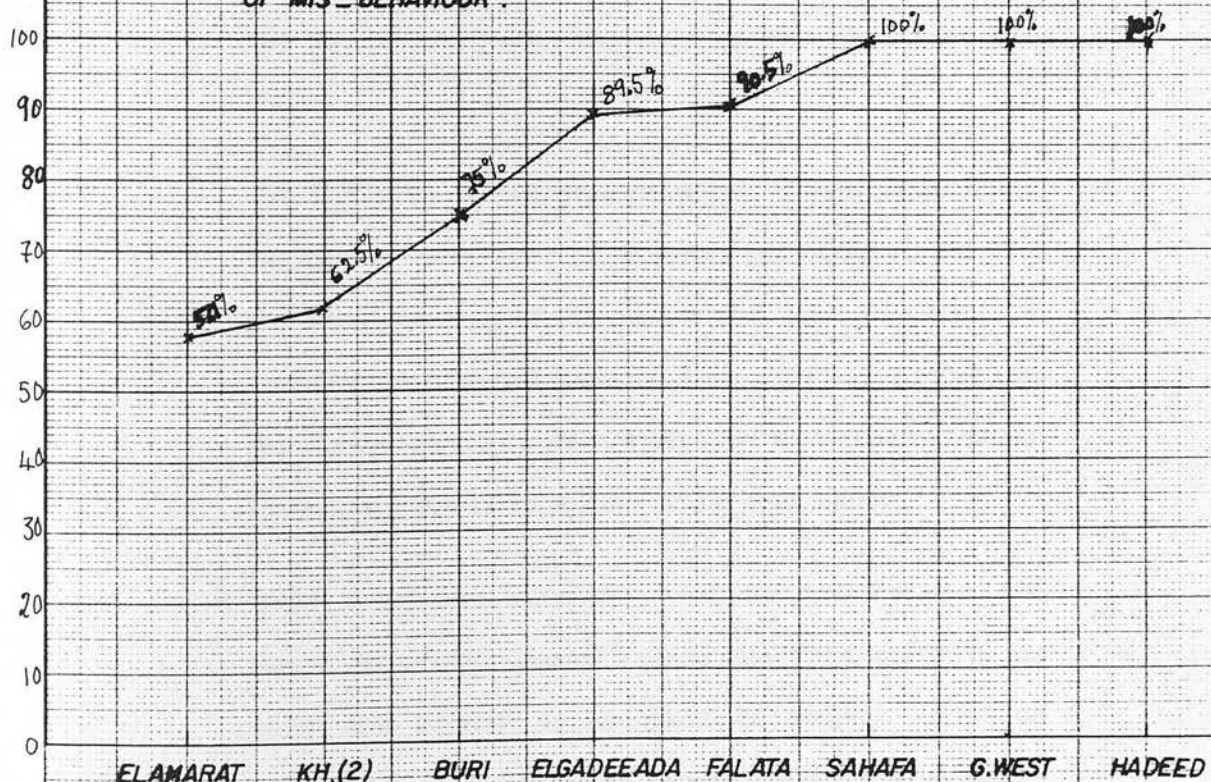
the following results:

1. The majority of respondents spend most of their leisure time at home or in recreation, with some variations in both cases, with the exception of Falata neighbourhood, (group 5). where practically no time has been left for leisure pursuits because residents work for longer hours to meet basic subsistence needs.
2. The collective economic co-operation in an extended family has given its members more financial support and ample time for leisure, if compared with nuclear family in the same class (third class)⁴⁰.
3. In the third class areas, extended families spend their leisure time at home less than nuclear families do as well as they spend their leisure time in recreation, more than nuclear families do.
4. The perception of the functions and benefits of a recreation pursuit, is improved by means of education process. In all categories there are very strong relationships between the specific category, (education, occupation, class and accomodation) and leisure time being spent in recreation⁴¹. These form the most important relations in the relevant tables. This demonstrates that the socio-economic factors, also have impact on recreation behaviour.

⁴⁰Fig (33)

⁴¹Figs (31) and (32)

Fig. 30 THE RELATION BETWEEN NEIGHBOURHOODS IN KHARTOUM & OPINION OF MIS-BEHAVIOUR.



5. The majority of all respondents, do not accept misbehaviour in public places and parks, with some variations between the different categories. This is because residents in upper class areas are more tolerant with regards to such mis-behaviour, than their counterparts in third class areas⁴².
6. The women's yard is in many cases linked to neighbour's back yard, through a small door, through which interactions and flow of tiny daily needs between families usually take place.
7. The Sudanese women have managed to gain some rights, i.e. right to work, right to recreate, etc. however, some of the traditional laws of the society still have their traces in curtailing their contributions in such activities. Accordingly the society considers the contribution of females in public recreation areas as an act of cultural contradiction.
8. These manifested variations in leisure time between the various respondents' groups⁴³, show clearly the impact of the social and physical environments on people's recreation behaviour. Consequently one can say that these variations in turn strongly support the central assumption of the study stated in Chapter 4.

⁴²Fig (30)

⁴³Fig (34)

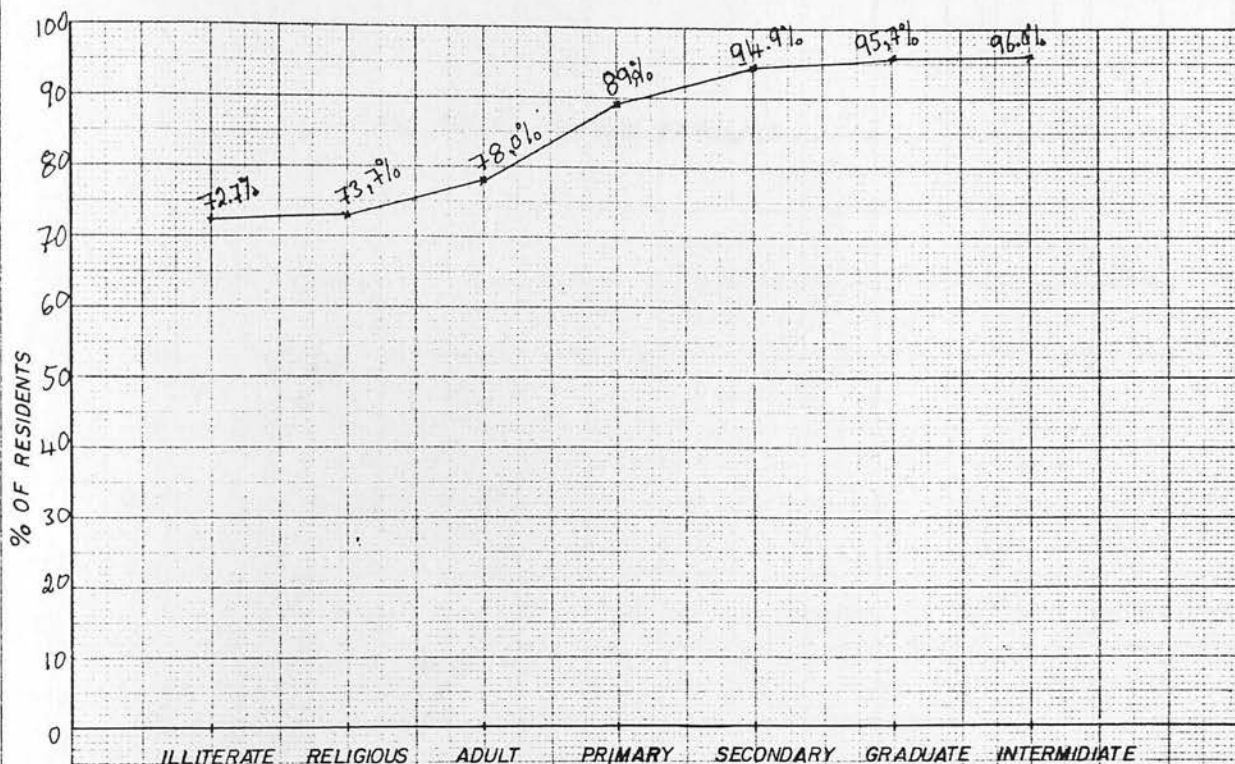


Fig:31 THE RELATIONSHIP BETWEEN EDUCATION AND LEISURE TIME BEEN SPENT IN RECREATION.

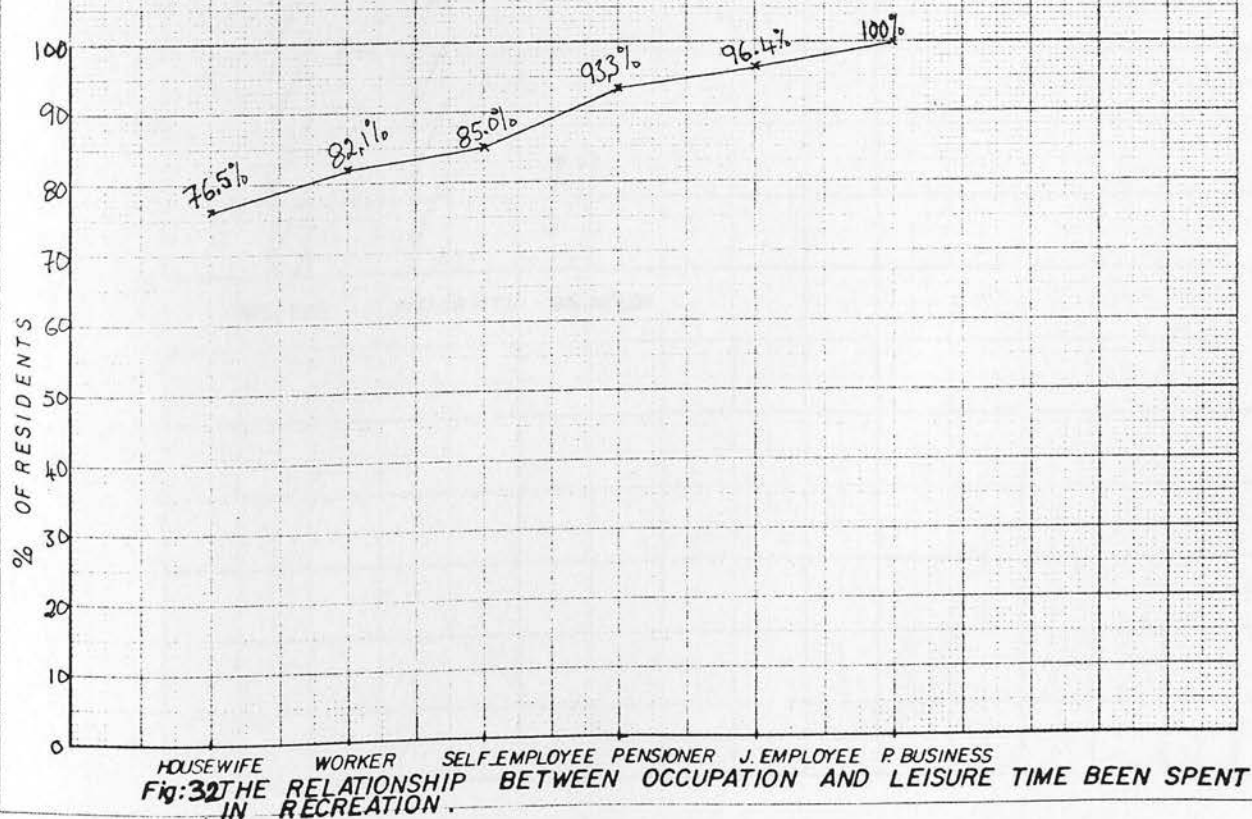
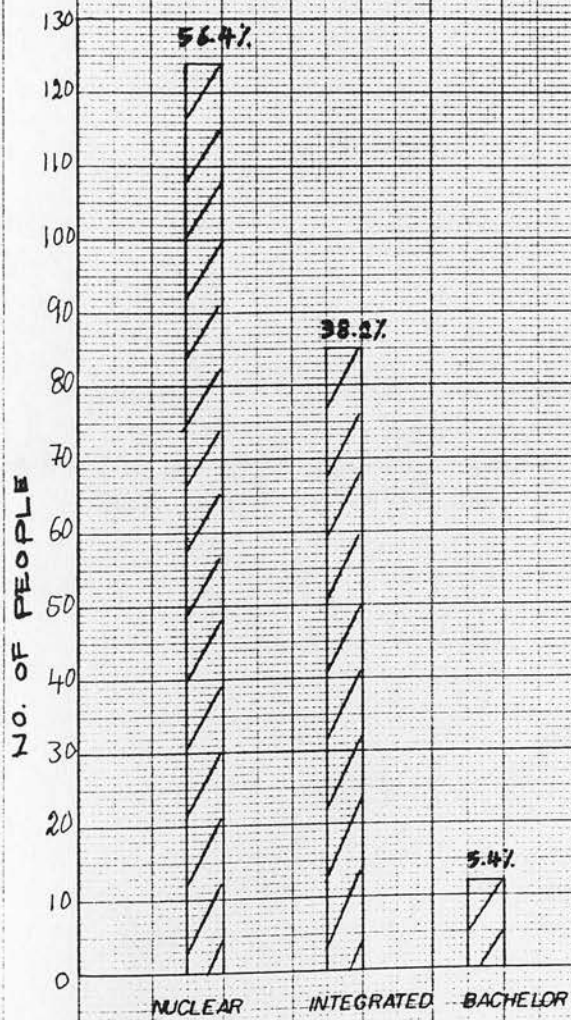


Fig:32 THE RELATIONSHIP BETWEEN OCCUPATION AND LEISURE TIME BEEN SPENT IN RECREATION.

Fig. 33 . SHOWS FAMILIES .



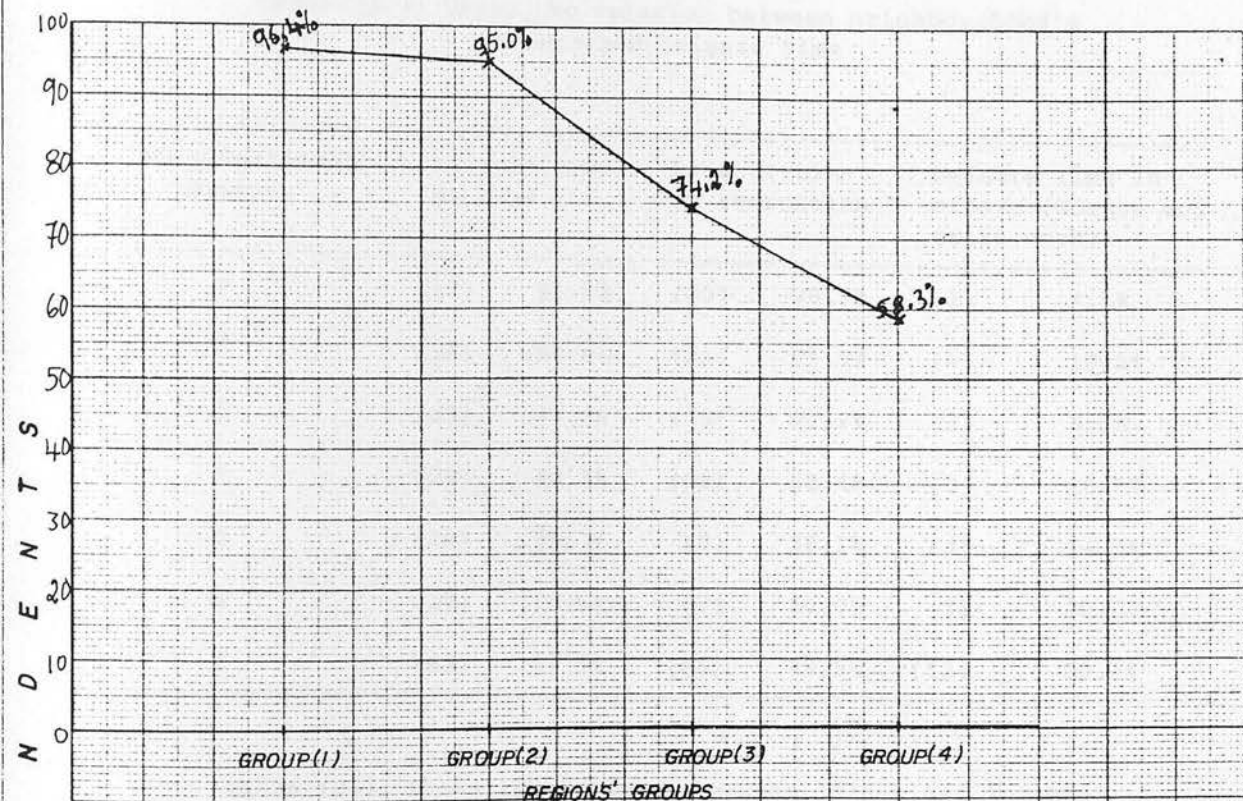


Fig.34a THE RELATION BETWEEN REGIONAL BACKGROUND AND LEISURE TIME BEEN SPENT IN RECREATION .

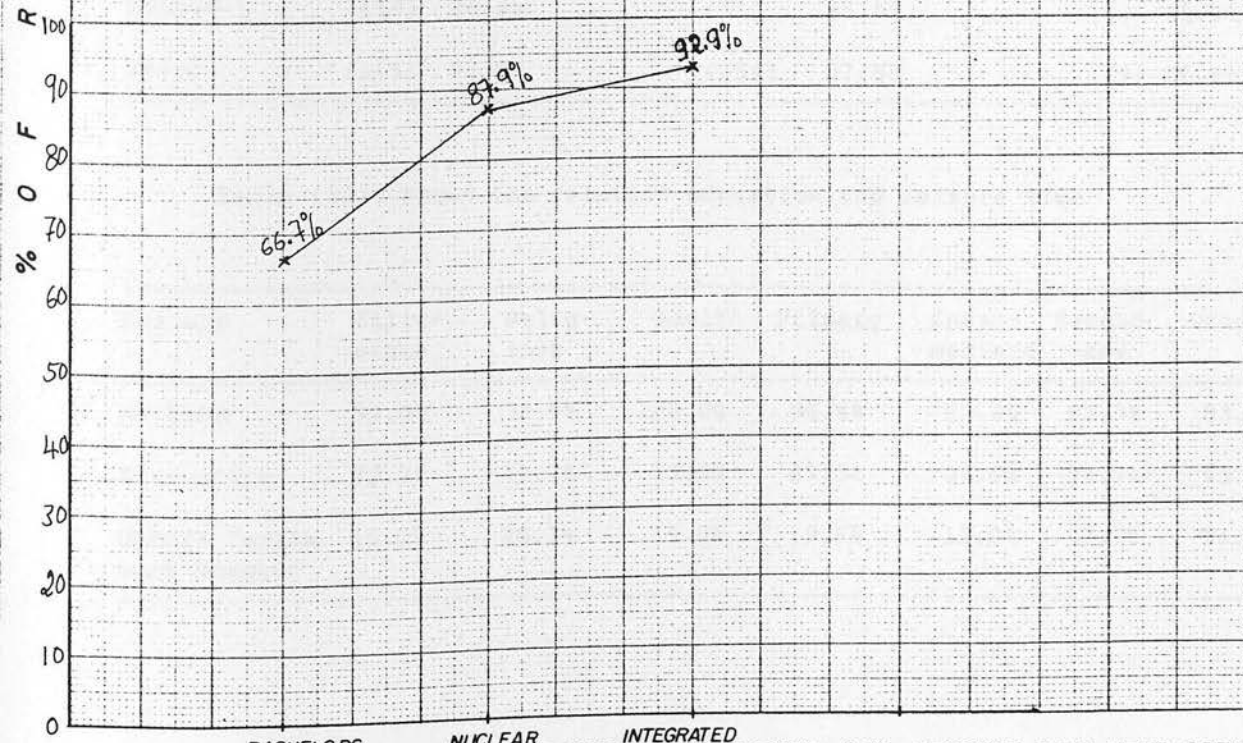


Fig.34b THE RELATIONSHIP BETWEEN FAMILY TYPE AND LEISURE TIME BEEN SPENT IN RECREATION .

Table (20): Shows the relation between neighbourhood's groups and leisure time

Neighbourhoods' groups	Leisure time at home		Leisure time in recreation		Leisure time in others (Mosque and extra work)	
1	(21)	95.5%	(20)	90.9%	(1)	4.5%
2	(19)	86.4%	(21)	95.5%	(4)	18.2%
3	(35)	97.2%	(35)	97.2%	(3)	8.3%
4	(39)	90.7%	(38)	88.4%	(7)	16.3%
5	(18)	85.7%	(8)	38.1%	(3)	14.3%
6	(10)	100.0%	(8)	80.0%	(3)	30.0%
7	(63)	95.5%	(65)	98.5%	(13)	19.7%

Table (21): Shows the relation between class and leisure time

Class	Leisure at home		Leisure in recreation		In Mosque and work	
First	(21)	95.5%	(20)	90.9%	(1)	4.5%
Second	(19)	86.4%	(21)	95.5%	(4)	18.3%
Third	(165)	93.8%	(154)	87.5%	(29)	16.5%

Table (22): Shows the relation education and leisure time

Leisure	Illit- erate	Relig- ious	Adult	Primary	Inter- mediate	Second -ary	Graduate
At home	97.0%	78.9%	100.0%	96.4%	92.0%	92.3%	93.6%
Recreation	72.7%	73.7%	15.0%	89.3%	96.0%	94.9%	95.7%
Others "extra work Mosque"	15.2%	26.3%	18.0%	19.6%	12.0%	7.7%	14.9%

Table (23): Shows occupations and leisure time

Leisure	House Wife	Senior Employee	Junior Employee	Private Business	Worker	Pensioner
At home	(17) 100.0%	(19) 95.0%	(79) 95.2%	(6) 85.7%	(70) 89.7%	(14) 93.3%
In recreation	(13) 76.5%	(17) 85.0%	(80) 96.4%	(7) 100.0%	(64) 82.1%	(14) 93.3%
Other "Mosque extra work"	(0) 0.0%	(2) 10.0%	(15) 18.1%	(1) 14.3%	(13) 16.7%	(3) 20.0%

Table (24): Shows the relation between family types and leisure time

Family	Leisure at home		Leisure in recreation		In Mosque and work	
Extended	(77)	91.7%	(78)	92.9%	(10)	11.9%
Nuclear	(116)	100.0%	(109)	87.9%	(23)	18.5%
Bachelor	(12)	100.0%	(8)	66.7%	(1)	8.3%

Table (25): Shows sex and leisure time

Sex	Leisure at home		Leisure in recreation		In Mosque and work	
Males	(178)	92.2%	(174)	90.2%	(34)	17.6%
Females	(27)	100.0%	(21)	77.8%	(00)	0.0%

Table (26): Shows the relation between regional backgrounds and leisure time

Regional Groups	Leisure at home		Leisure in recreation		In Mosque and extra work	
Group (1)	(79)	95.2%	(80)	96.4%	(9)	10.8%
Group (2)	(74)	92.5%	(76)	95.0%	(17)	21.25%
Group (3)	(28)	90.3%	(23)	74.2%	(7)	22.6%
Group (4)	(22)	91.7%	(14)	58.3%	(1)	4.2%

Table (27) Shows the relation between length of residence and leisure time

Length of Residence	Leisure at home		Leisure in Recreation		In others (Mosque extra work)	
1 - 10 years	(64)	94.1%	(55)	80.9%	(4)	5.9%
11 - 20 years	(55)	91.7%	(55)	91.7%	(11)	18.3%
Over 20 years	(85)	93.4%	(84)	92.3%	(18)	19.8%

Table (28): Shows the relation between age-group and leisure time

Age-groups	Leisure at home		Leisure in recreation		In Mosque and work	
16 - 20	(2)	100.0%	(1)	50.0%	(0)	0.0%
21 - 30	(35)	94.6%	(34)	91.9%	(3)	8.1%
31 - 40	(51)	94.4%	(47)	87.0%	(6)	11.1%
over 40	(117)	92.1%	(113)	89.0%	(25)	19.7%

5.3.5. Implication from Culture

In Chapter 3, a survey of the core of the Northern Sudanese culture that related directly or indirectly to the built environment has been presented. This part of the current chapter will investigate the implication of the cultural institution system on the urban forms in the Northern Sudan.

Land Ownership and Property Rights

In most Muslim countries there is no feudal system of land, as in most Western countries, due to the belief that land belongs to God, and should be utilised to guarantee benefits to all his creatures. And since land is the main key to developments, in all urban projects, such as housing, roads, schools, hospitals, offices etc., its acquirement for such vital schemes is a complicated matter if not impossibility in some countries. However in the Sudanese case and according to the Islamic Law of land ownership and property rights,⁴⁴ local authorities and governments have at their disposal the right to revoke private land for the public benefit, under the "beneficial action law". In such cases a reasonable compensation will be given to the owner, which should be less than the actual market price.

The implication of this law has resulted in the following:

1. A simplified procedure for the acquirement of land for any public need.
2. Sufficient land could be available at any time for numerous public uses, i.e., housing etc. This could be utilised in solving the present spatial problems, manifested in towns,

⁴⁴Chapter (3)

by being more generous to residents, whether that be internal, (plots) or external, (public spaces).

3. This law also has contributed very much to the spreading of squatter settlements in the peripheries of towns, and since land belongs to the government, people have the right to build their houses in any vacant site according to their view. On the other hand this law could help the authorities to organise, manage, plan, and create varieties of housing schemes, if it is utilised properly through proper laws, organising the use and need for land in urban areas.

Equality

Although Islam permits individuals to work freely, and collect any wealth in the right way, and give the specific percentage of their wealth to the poor, it does not classify people on economic grounds, but on their deeds to God, their own community and humanity as a whole. Based on this concept Islam does not recognise the present urban classification system on economic or occupational grounds. This has resulted not only in grouping rich people on one side and the poor on the other but on vast plots been provided for the rich and small plots for the poor, regardless of the family size, (Chapter 2). This unjust situation should be corrected by allocating plots for the family's spatial needs according to its household size (Chapter 9). On one hand, the implication of the notion of equality should be the creation of economically heterogeneous neighbourhoods, (Chapter 9). While one should admit, it is very difficult to achieve this in the twentieth century, there should be an attempt at a solution. On the other hand as a consequence of this equality and privacy measures, (coming paragraphs), most cities in the Muslim world were expanded horizontally.

Privacy and Sexes Segregation

Privacy in the Sudanese society has mainly meant the seclusion of the female population, from the outside world, as well as segregated physically and socially within the household, (Chapter 3). To achieve this goal, the society rely entirely on the provision of environmental mechanisms such as solid walls at the house level, and proper Islamic dress at the individual level, and sometimes distance as the case of nomads.

From an Islamic point of view to see into another person's house or overlooks it is causing great harm and damage to that family, and Islamic Law insists on removing such harm, (Chapter 3). To fulfil this aim many measures have been taken at the house and neighbourhood levels, such as:

- (a) Placement of windows: facing the street, small high level windows or no windows at all. This situation mainly fits the hot arid climate, (Chapter 2), such as the climate of most Northern Sudan. In other climates where no radiation from the ground and cross ventilation is needed, modern building materials could be used, i.e., blinds, etc.
- (b) Physical segregation: in the past, courtyard houses were best fitting the Muslims needs, where the inner court is the women's domain. However due to economy and the desire to modernise people have shifted towards detached houses or bungalows, surrounded with two-metre high solid walls and the provision of back (women) and front(men) yards. These two yards are intended to segregate the two sexes within the household socially and physically. Where each sex performs its day to day duties, and entertain its own guests. The yards together with the two sexes' quarters

and entrances are meant mainly to stop the direct intrusion of strangers of the opposite sex, (Chapter 3).

(c) Placement of entrances: entrances to neighbouring houses or opposite ones should be arranged in a way so as not to allow people from their entrances or houses to see into others' houses. These measures should be arranged by people themselves, (Chapter 3). Within each individual house, each sex has its own entrance to facilitate the in and out going of that sex, and the same rules mentioned above are applied in each case.

(d) Limitation of height: limitations of height of buildings has been introduced in the past to prevent overlooking of other people's houses. This together with equality, as has been mentioned before, contributed very much to the horizontality of most Muslim's cities in the past. Due to harsh climate, house' terraces are used in most hot arid climates for outdoor sleeping at night and for other functions. In such cases the overlooking of a neighbour's house should be prevented by mutual agreement between neighbours, (Chapter 3).

(e) Settings: due to the sex segregation rules, the Sudanese society has provided some settings for each sex group, such as schools, mosques, offices, etc. (see Chapter 3 for more details).

(f) Public parks: although the society has provided some behaviour settings for each sex as has been mentioned above, however it has not provided public parks for females.

Due to this females or families generally, have little benefits in such parks. This is mainly due to the misbehaviour factors, (see this chapter under leisure and misbehaviour).

- (g) Defensive measures: due to measures for security and privacy precautions, most Sudanese people consider the few metres of precinct in front of their houses are theirs, and have the right to defend them, see Chapter 3.

Neighbouring Rights

The dispute between adjacent co-residents regarding the use of their properties in environmental situation has been left to informal agreements between them. In such a way that urban development would not infringe on the privacy or property right of each other, (Chapter 3). This informal agreement varies between neighbours depending on the degree of homogeneity between them, and in most cases a spatial relationship between proximate neighbours could be created and maintained. Such relationships could influence the physical forms of their houses, such as the partitioning wall between them, the positioning and use of roof terraces, the positioning of entrances, etc.

Inheritance Law

Islamic law of inheritance has allocated a fixed percentage of inherited property for each member of a family. This percentage varied by closeness to the dead person and sex, i.e., a son of a dead person gets half the inheritance, and daughter gets a quarter of it, yet his partner, (wife or husband) get one eighth of it, even parents, brothers, sisters, uncles and aunts have get their own percentages, according to this law. Any physical environment, (house), could be divided on this basis. The result of which could be a fragmentation of the

property. This fragmentation could be in the form of a room, rooms, floor, floors or part of the house, (see Chapters 3 and 5). The result for such division will be reflected physically in the house (as have been mentioned above), and socially in the neighbourhood as a whole. Socially the subtle division compels the residents either to sell the property or rent it to somebody else, (This chapter and Chapter 7), this process in turn breaks the homogeneity of the neighbourhood.

Territoriality

In the Sudanese case, territoriality has implications in the built environment at three levels:

1. Sex segregation: where each sex has its own rooms, recreational area, living and outdoor sleeping areas. Adults from both sexes seldom stay on in the other sex's domain. If that happens, it is only on specific occasions, or for a short time, when there are no visitors (strangers) from the opposite sex.
2. Boundary walls: basically they have two functions:
 - a. for privacy and
 - b. territory purposes.

Since the former function is mainly concerned with females, and they have already been segregated by the provision of women's quarters and internal partition walls, it could be argued that the boundary wall is in the first place for demarcation purposes.

3. The Street: People consider the part of the street, (2 – 3 m)

adjacent to their boundary wall as theirs, (as has been mentioned in this chapter under privacy and sex segregation). This could be understood either to safeguard their territory and family from theft, danger or intrusion, or to reserve it for male activities. Few demarcate the semi-private territory by the use of temporary transparent fences, hedges or low level demarcation, i.e., stone, bricks or tyres. In many cases, it is left blank to show it belongs to the local authority in which case people will be asked to leave if they hang on for a long duration at night and are acting suspiciously during the day.

The existing open spaces within neighbourhoods are not properly utilised and neglected for the following reasons:

1. The lack of group territoriality due to heterogeneous residents.
2. Such open spaces were not properly integrated, (clustered) with houses, and were poorly utilised. To guarantee a successful, lively, well-maintained, supervised and protected open spaces, first they should be well integrated to houses, belong to homogeneous residents who could develop a sense of territoriality towards such spaces, and have a free-hand in running and maintaining them.

Domestic Group Organisation

As has been mentioned before, in Chapter 3, the above mentioned term is used by anthropologists to group specific cultural aspects, such as kinship, marriage

and family, etc. These aspects represent the core of the culture and for this reason, anthropologists believe that they are unlikely to change. Their implication on the Sudanese built environment, could be summarised in the following:

1. Although the Sudanese society has a patrilineal descent, relatives from the matrilineal side, could have the same rights, socially, residentially and economically, but always the priority is given to the patrilineal relatives, (Chapter 3). On one hand the rights of relatives (bachelors) from both sides, could be long residency, otherwise it could be on temporary basis. On the other hand active contribution in any ceremonial occasion and family affairs is considered the duty of all. Besides these relationships, tribal and regional affiliations are also of utmost importance to the Sudanese people, but rank in the third and fourth places respectively.
2. Spatial and service arrangements, should be met by the hosting family for the influx of relatives, friends and close people, especially in cases of a family's ceremonies. This situation has doubled the actual number of the household, which should be taken into consideration in any environmental planning matters, such as space standards, and public utilities. Viable services are based on the expected number of population and not the actual one, (Chapters 2 and 3).
3. The fact that most Sudanese prefer to marry from their well known circles, i.e., patrilineal and matrilineal kinships, tribe religion, neighbours or friends, (Chapter 3), has imposed

spatial burdens on the hosting family, due to the large number who are obliged to turn up for such occasions, (Chapter 3). This problem has been aggravated by the need to publicise the marriage as required by Islam (Chapter 3).

4. Explicitly the Sudanese systems of marriage and residence have a tremendous impact on the house and its immediate surrounding spaces, (Chapter 3). One of these implications is the generation cycles of the family. If we assume that a nuclear family starts its life in its own house, when its children grow up, and get married, they need residential spaces within the family's house, thus the nuclear family become an extended one. In most cases rooms are added to accommodate the new married couple. This spatial expansion could be horizontal or vertical, depend on the family's economic situation. The addition of rooms horizontally will add to the spatial problem already existing and compel people to build on the house's yards and move their activities to the semi-private and the public side, (street). So again consideration should be given for such expansions in the allocation of spaces and housedesign.

5. Based on the Northern Sudanese nomadic pattern of layout, (Chapter 3), and the survival of the extended family in the urban areas.⁴⁵ bearing in mind the provision of easy accommodation and financial support for newly married couples in the extended family, which otherwise will

⁴⁵Fig: (33)

endanger the future life of such couples, separate plots should be allocated for future extended families in third class areas, or provision of vertical expansion in upper classes areas.

5.4. Summary and Implications for Specific Research Issues

The general findings in this chapter have implications on all research issues included in this study. These general findings, are mainly related to the use of front and backyards (women's and men's yards), children's playing areas and restrictions on that, ceremonies performance, leisure time, respondents' stance regarding misbehaviour in public areas and cultural implications, all within the context of respondents characteristics.

Women's and men's yards

Urban space is generally divided into domains distinguished by various rules and symbols. Their purpose basically is to establish boundaries between us and them, and public and private, thus ensuring the desired levels of interaction, inclusion or exclusion and providing the appropriate defences. All these differ among various groups so that the Sudanese society has men's and women's yards instead of back and front yards as known in western countries. This unique society not only distinguishes between public and private, but segregates the members of one family in terms of sexes. This system of sex segregation is extended to other behaviour settings and public services.

The summing up of the data shows that the use of men's and women's yards with differences in respondents characteristics, ie., town, neighbourhood, and class, is similar in some aspects and differ in others, which could be summarised in the following:

1. Regardless of town and neighbourhood, the women's yard is mainly used for domestic purpose, privacy and safety. The men's yard is used for entertaining guests and visitors. Both yards are used for out door sleeping and sex segregation.

These aspects on which there is a consensus of use between the two yards, in fact form the cultural core of the Sudanese society.

2. Also there are some variations between the use of the two yards regarding some psychological behaviour, in which the physical form plays an important role. For instance residents in neighbourhoods with grid-iron pattern (wider street), feel disturbed with traffic noise, but their counterparts in indigenous neighbourhoods feel calm and quiet.

3. The classification of neighbourhoods into classes, has resulted in spatial and physical variations between them. These variations in turn will obviously encourage some form of behaviour and discourage others. For example residents in upper class areas sleep indoors, those in third class areas sleep in the yards.

The use of the two yards in relation to towns, neighbourhood and class, shows clearly the level of consensus of use. Although in the first part there is a general consensus regarding the institutions related to the Sudanese cultural core and in the second part there is no consensus of use of yards in terms of psychological (i.e., quiet). It could be concluded that the use of the two yards, resolves sub-problems 1, 2 and 3, as well as support research issues 1, 2 and

3. Since we do not expect the cultural core to change due to physical and spatial variations between neighbourhoods.

Children Playing Areas and Restrictions

The focus on the issue of play in this study is for two reasons. First, play is a central feature of children's daily lives. When not in school, much of their time is devoted to "environment learning", and the sharpening of skills and abilities that are acquired through play and related activities. Many of these activities take place outside the house, but near-by. In this sense the neighbourhood represents an opportunity for play. Second, problems of where to play, whom not to play with, and the like are matters of intense concern to children and parents alike.

This chapter demonstrates significant similarities and differences across the survey population and among the survey neighbourhoods in response to questions about play and play patterns. These similarities and differences were explored to see the impact of the physical and spatial pattern on such behaviour on one hand, and on the other to see the influence of a socio-cultural relation on such behaviour.

While it has been found that one of the roles of the street is to accommodate play patterns, it also creates play opportunities. This "unprogrammed space" attract children universally.⁴⁶

Among the twenty two neighbourhoods, in some instances the streets constrain the children, and keep them close to home – in other cases, the children feel unsafe because of the traffic. Despite apparent danger, however, the children find the streets generally more exciting than a myriad of other play

⁴⁶Lynch et al., (1977); Benjamin, 1974, Jacobs 1961; Gans, 1962.

places. Parks and play grounds (planned with the children in mind) were often seen as dull in comparison with interesting street life.

The research suggests that in major streets, traffic safety conditions, social uncertainty and close supervision are factors affecting how far away from home children are allowed to go on their own. In this sense, defining attendance areas as neighbourhoods appears to approximate the child's experience in space. The important thing to note is that these areas take into account natural boundaries and limits that parents are likely to set on a child's "range".

Although as has been mentioned before, that the childrens' playing patterns can be affected by the age of children, type of family, and restrictions imposed on their playing area. The most important conclusion of the research in this context, is that the behaviour of children could be predicted more accurately from knowing the situations (physical) the children are in than from knowing individual characteristics of the children. This is found to be in line with the findings by Barker and Wright in their records of children's behaviour.

Regarding the implication of the childrens' playing pattern on the specific research issues, the data has revealed very striking findings, which can be summarised in the following:

- i. It seems that the street is the only positive area where the majority of children play, as has been mentioned before. Because the street is no further than their front door, and they are within call when needed. Indeed, the street in front of their home is seemingly theirs, more so sometimes than the family living room; and of more significance to them, very often, than any amenity provided by the local community.

- ii. Children and parents alike have negative attitudes towards childrens' play in near or far open spaces, social clubs, family's house or home village, regardless of respondents' characteristics. This is due to the lack of close supervision and lack of intimacy because of formality.
- iii. Regarding the interior spaces (yards), there are many variations in childrens' playing pattern. This explicitly can be attributed to the spatial characteristics of a neighbourhood or class. For instance children in upper classes do play in both yards, although their counterparts in third class areas do not.
- iv. Similarly children in third class areas, do play in their neighbour's house, despite the common spatial deficiency in that part of the town. This is due to the strong socio-spatial relationships which are lacking in upper class areas.
- v. Regarding traffic and social restrictions, respondents can be divided into two groups,:
 - a. Those who live in neighbourhoods with grid-iron patterns, and heterogeneous residents, in such situations, residents are mainly worried about traffic accidents and to some degree the social environment.
 - b. Those who live in indigenous neighbourhoods, with narrow alleys and homogeneous residents, they do not bother either about traffic nor social

restrictions.

We can conclude that as a general finding among residents in all categories and groups is that the principle play area of children is the streets. We can also conclude that the majority of all children in the different categories seldom play in near or far open spaces, social clubs, family's house or home village. There is a general consensus on these two general findings. However, there are some variations between respondents, regarding children play in women's and men's yards, neighbour's house, traffic and social restrictions imposed on children play areas.

Finally it can be concluded that most of the findings presented above support research issues (1), (2) and (3), and resolve sub-problems (1), (2) and (3).⁴⁷

Performance of Ceremonies

There are some general similarities between the locations of ceremonial performances and children play areas, except the fact that the former has got one positive place for such performances and that is the street.

Few people perform their ceremonies in near and far open spaces, social clubs, family house or home village across the different categories and groups and for various reasons as has been mentioned before. However, respondents are varying in their use of yards, streets and neighbour's house for such ceremonies.

Accordingly the data on one hand reveals that there are clear variations of the whereabouts of ceremonies performance, and on the other there is agreement between all respondents in different categories that some places are not

⁴⁷See Chapters (5), (6) and (7).

popular for the performance of such ceremonies.

Thus we conclude that spatial and physical configurations of the environment can influence the whereabouts of ceremonies performance. Also these facts strongly resolve sub-problems (1), (2) and (3), and support research issues (1), (2) and (3), mentioned in Chapters (5), (6) and (7).

Leisure Time

Obviously leisure is becoming a very important factor in urban life. People after very long working hours need time to rest, change, relax, socialise, etc., for the maintenance of their well being.

The way individuals spend their leisure time rotates around two main areas:- at home and in recreation. The former is universal, where people spend the bulk of their time at home among their families. What the urban life has added to this are the numerous amusements such as T.V., radio, video tapes, playing cards etc. The latter is concerned with spending leisure time out of home, whether in the semi-private space, the street, neighbourhood, parks, social visits etc.

What concerns us here, is how people spend whatever leisure time they have. The majority of respondents spend most of their leisure time at home, regardless of town, neighbourhood, class, length of residence, etc. With regards to this, physical environment can do little to change people's leisure time being spent at home.

Socialisation is an important human need, that can be fulfilled after the achievement of other basic human needs as has been mentioned before in this chapter.

The data shows that most respondents also spend most of their leisure time in

recreation, but with some variations due to different socio-economic factors and physical environments.

It could be argued that since home is the place provided for spending most of the leisure time world-wide, and since there are variations in the way residents spend their leisure time in recreation, we conclude that this in itself resolves all sub-problems mentioned in this study except sub-problem (6), as well as supports all research issues except research issue (6).⁴⁸

Misbehaviour in Public Areas

Attitudes of individuals and groups toward definable aspects of the environment and their stands on salient environment issues have been matters of high concern for the broadening field of environmental studies.⁴⁹

A primary factor limiting the range of individual behaviour variations is the culture itself. The noted French sociologist Emile Durkheim⁵⁰ stressed that culture is something outside us, external to the individual on whom it exerts a strong coercive power. We do not always feel the constraints of our culture because we generally conform to the types of conduct and thought it requires. Yet when we do try to oppose the cultural constraints, their strength becomes apparent.

Generally speaking in any given society people must conform with the unwritten rules especially in public places. However despite this some odd behaviour occurs from time to time. This odd behaviour generally annoys many people especially the elderly. Such situation could vary between different

⁴⁸ Chapters 6 - 13

⁴⁹ William H. Bruvold, *Environment and Behaviour*, June 1973, *Belief and Behaviour*, pp.202

⁵⁰ *Ibid*

societies, depending on the society's beliefs, what is right and wrong etc.

Obviously Muslims are strictly forbidden to drink alcohol, gamble or practice any sort of illegal sexual behaviour in private or public. Despite this some Muslims drink alcohol and gamble even in public. The present study shows that respondents are divided in their response to this matter. Many residents in upper class areas regard this as a matter of personal freedom, although their counterparts in third class areas do not accept such misbehaviour and call for conformity with the Muslim culture. This latter response has a negative affect on residents' contribution in public park's activities. Thus a necessity has arisen for separate parks for families.

The divided responses of residents regarding misbehaviour in public parks, strongly resolves sub-problem (6) and supports research issue (6), (See Chapter 11).

Culture

Generally the environment is divided into public and private domains. Within residential areas, the public domain is conceived as belonging to a specific group or privately owned, ie., open spaces, and part of the street. On the other hand the private domain is divided between sex-groups as has been mentioned before. In such situations the urban spaces must be congruent with the social structure of the society. Not only that, public participation has been introduced to allow adjacent co-residents to check each other's built form and its use. The disputes that arise due to this are left to them to sort out. Also the preservation of the physical and social environments has been left in the hands of the adjacent neighbours to tackle.

The domestic group organisation is a very unique cultural institution in the Sudanese society. Here the society is structured into social groups of related

people by kin, affiliation, tribe, region, etc. Each relationship entitles an individual who belongs to it to specific rights, such as residential, economic etc. This situation has created a net of people who claim various spatial rights, this in turn puts more pressure on the spatial resources available within a house.

Finally the sum of the Sudanese socio-cultural factors mentioned in this Chapter has an explicitly tangible impact on the Sudanese built environment. This fact strongly demonstrates the influence of the culture on the built environment, which in turn supports the central assumption of this study that different cultures create and inhabit different physical environments.

5.5. Conclusions

The Use of Yards

1. The car has a tremendous impact on the use of backyards for noise disturbance reasons. There is a strong and significant relationship between the neighbourhoods' groups (planning pattern), and the use of women's yards for such a reason. In other words, a neighbourhood with narrow alleys and those that lie far away from main traffic routes, do enjoy comparatively quiet backyards, and vice versa. This will support the hypothesis that different patterns of neighbourhoods could generate different psychological behaviour.
2. The positioning of women's yards at the rear of the house, makes it more secure. Many check points have been introduced along the route leading to it. Although the majority of the groups do not use the women's yard for

security reasons it seems that residents in the indigenous neighbourhoods do feel more secure in their back yards than other residents do. There is a significant relationship between the different groups, due to their physical variation, which in itself supports research issue (1), (Chapter (6)).

3. The majority of groups do not recognise sex segregation as one of the main reasons behind the provision of women's yards. This could be for many different reasons, such as lack of a yard, its size, or that residents do not realise its real function, since it is there fulfilling other functions. The crucial fact is that sex segregation is in existence in all aspects of life, within the house, as well as outside the sphere of the house. The data revealed a significant relationship between the different groups, which is due to the spatial and physical variations between them. This in turn supports research issue (2), (Chapter 7).

4. Most groups do use back yards for domestic purposes. This seems to be the most beneficial use of the yard, together with segregation and outdoor sleeping. There is a very strong, systematic and significant relationship between the neighbourhoods' group and the use of back yards for domestic reasons. The spatial and physical variations between neighbourhoods have their impact on the responses of residents, regarding the use of back yards, which will also support research issue (2).

5. The majority of respondents in different neighbourhoods do use men's yards, mainly for welcoming and entertaining

guests, as well as for climatical reasons, (outdoor sleeping, chatting, eating and drinking). The whole exercise shows that the variations in responses to different reasons for uses between the neighbourhoods, support clearly research issue (2).

6. Generally, women are responsible for the supervision of children playing, thus the women's yard is the second playing area after the street.

Children Play Areas

7. Homogeneity within the neighbourhoods helps children play in the neighbour's house, especially in clannishly homogeneous ones. Thus there are strong social relationship and ties between neighbours.
8. The variations of age-groups in extended families help children in such families to play in the street more than nuclear families do. This is mainly because elder children supervise the young ones.
9. Parents close supervision to some extent determines children's playing areas.
10. Although the street is the main playing area in greater Khartoum, regardless of the planning pattern, the traffic in it causes a lot of worries to parents in the main cities. Thus traffic control is vitally important in residential areas, to allow children to play freely, thus creating lively streets and neighbourhoods.

11. Social restriction is clearly manifested in working class communities, "Khartoum North". The less socially homogeneous a neighbourhood is, the more social restrictions its residents place on their children's playing areas.
12. The planning pattern of a neighbourhood, the plot size of a house, availability of yards, and the social milieu, could have a very strong impact on children's playing behaviour patterns. Thus various neighbourhoods could have variable playing patterns.
13. The street is a very vital and important physical feature in third class areas functionally.
14. The different patterns of children's playing behaviour temporally and locationally, as well as the variations of restrictions imposed on them in different places, have manifested clearly the impact of the pattern of a specific neighbourhood on parents, as well as on children. Thus the impact of the class and before that the requirement of a specific occupation socially and spatially.

Ceremonies

15. There are four factors which determine the place of ceremonies, and these in turn affect each other. These factors are:

- a. The spatial factor.
- b. The economic factor.

c. The type of event.

d. The number of guests.

16. It is manifested that the indigenous areas, "Umdorman and Tuti", were equipped spatially more better than the new cities, in coping and matching with the ceremonial activities acquired by the Sudanese society.
17. Residents in indigenous areas, Umdorman and Tuti, are more helpful and co-operative in sharing their own properties with their neighbours, when having ceremonies. This is due to tribal and clannish homogeneity.
18. Less integration between open spaces and houses in the neighbourhood has made the open spaces more redundant and poorly utilised for ceremonies, "playing behaviour", because residents do not have intimacy with them.
19. Due to the provision of wider streets, small plots, huge number of guests, 500 - 2000, and unutilised open spaces, residents tend to perform their ceremonies in the streets. This has caused a lot of inconvenience to passers-by, especially those in cars, due to the closing up of the streets.
20. Ceremonies are more or less consistent in spatial terms among different categories.
21. The sharing of life's daily needs between residents is a very important ingredient for a very strong, healthy, and

reciprocal relationship between neighbours.

22. The Sudanese exaggeration in ceremonies is mainly for the following reasons: (a) to conform with a cultural institution; (b) to exhibit and show off the family wealth.
23. On one hand, it seems that it is not practical and uneconomic to provide each individual with a large plot to accommodate such ceremonies. On the other, it is inconvenient to allow residents to seal off main traffic routes in cities to house such occasions for days. Nor it is logical to ask them to give up such vital cultural institutions. The practical approach for solving this problem, is to allocate a multi-purpose open space for a fixed group of houses, clustered and integrated together to ensure a better social relationship. At the same time, a review of the current space standard, is vital for social justice, based on family size and to conform with the cultural and daily needs for individuals and families.

Leisure Time

24. The majority of all respondents do like to see, encourage and contribute to, accepted social behaviour, religious behaviour and accepted recreational behaviour. However, social behaviour is the most important with little variations between respondents, since it conforms with the Sudanese culture.
25. Religious behaviour is covering a wide range of behaviour, from prayers "personal", to the way of talking to others

"interaction". It is accepted by most respondents, but with some variations, depending on education, religious stands and personal attitudes.

26. The state of crowding in a house has drastic influence on residents being forced to spend their leisure time outside home.

27. More public parks are needed in greater Khartoum to integrate with the general planning layout, with more legislation to curtail misbehaviour and wrong doing. Because the provision of unsuitable public parks socio-culturally, could jeopardise their use, thus their existence. Also detailed physical elements within each park are needed to match with people's needs and activities, which in turn could attract more people.

28. Residents' education standards and general knowledge in a specific Sudanese city, i.e., Khartoum, could have a negative attitude towards conformity in social, religious, and recreational behaviour with the Sudanese culture.

29. The upper class residents in Khartoum city, who have heterogeneous societies, socially, religiously, and occupationally, have the tendency to be more tolerant than those who live within a homogeneous population, regarding the opinion about misbehaviour in public areas. This means that homogeneity is an effective tool for conforming with the shared aspects of culture.

30. Socio-economic factors (family structure and class) have an

impact on how residents spend their leisure time, whether in recreation, at home, or in other activities, as is the case of extended and nuclear families in different classes.

31. Although many cultures are nowadays in a process of change, and many people argue that the changes which took place in western culture will necessarily happen in other cultures. One can argue that, the changes anticipated in the Sudanese culture, are completely irrelevant to that which happened to western culture, since each culture has its own cultural institutional structure (core).

CHAPTER 6

THE IMPACT OF IMPORTED AND INDIGENOUS MACRO -
ENVIRONMENT - CITIES

The previous chapters are devoted exclusively to the general introduction, the problem and its subordinate sub-problems, the research approach and methodology, and the general findings.

This chapter will tackle sub-problem (1) and research issue (1), which are both related to the Macroscales (*cities*). For more detailed information about these cities see Chapter 2.

The main problem

People from different cultures, not only speak different languages, but in fact acquire different built environments to accommodate their diversified needs and socio-cultural behaviour. The Sudanese people are not an exception to this. So does any attempt to change the indigenous Sudanese built environments consciously or unconsciously, ultimately result in a different socio-cultural behaviour which might have serious social and psychological implications?

Sub-problem (1)

Many Sudanese cities have been designed during the colonisation era. Others recently under the umbrella of technological and economic assistance and cooperation. The common and shared factor between them is that the indigenous culture had been ignored and neglected. Consequently what do people do in such circumstances to adapt to the built environment and cope with it, so as to meet their socio-cultural and daily life needs?

Research issue (1)

The three main study areas (Khartoum, Umdorman, Khartoum North), were established in different eras, each has a distinctive planning pattern yet they have homogeneous residents culturally. Do their residents exhibit the same socio-cultural, play, recreation, climatical (outdoor sleeping and cooking), psychological (contact, isolation, etc), behaviour in different physical settings? Furthermore do they see the need to change the built environment by addition or alterations?

6.1. Introduction

In a traditional Muslim city such as Antioch, as recently as 1934, there were many specialised areas. There were 25 souks (*bazaar*) subdivided among three dimensions - technical (by crafts), topographic (with all artisans of one corporation side by side) and ethnic (grouping artisans of one corporation and bazaar). The souks were thus subdivided into very small and complex quarters. There were also many ethnic and religious residential quarters, self-contained and exogamous. Within the quarter one knew everyone and felt safe. Turkish, Christian and Arab quarters were differentiated, subdivided and varied and, in case of Arab areas, even more introverted. The three large groupings expressed a status hierarchical, with Turks dominant.¹

In traditional African cities there is a similar pattern. Thus in Nigeria there are regional tribal divisions, where cities are divided into quarters of the different groups and the heterogeneous population is grouped by ethnicity, religion, occupation and social status.² Yoruba cities are divided into areas of extended

¹Weulersse 1943.

²e.g. Mabogunje 1968, p.64

families comprising hundreds of nuclear families. All people within a neighbourhood are closely related and adjoining areas are also related, although less closely. The city is thus a hierarchical system of houses, compounds, neighbourhoods and clusters of neighbourhoods of related people. These are closely built and larger spaces separate less closely related groups.³ This is important since it provides help to the elderly and poor, replacing social services, and leads to specific symbolism of place (with burial in the compound) and general identification with place.⁴

In Africa generally, cities "belong" to different ethnic groups, and there is a long tradition of identifying territory with ethnic groups. Traditional cities thus, often had quarters for aliens, whether visitors or permanent residents. Each enclave had a chief or headman responsible to a higher level authority. In more heterogeneous cities, such as Jos in Nigeria, there tended to be more riots.⁵ The traditional system was preserved in colonial times and even today ethnic, tribe and kinship areas are extremely important in African cities, even if cross-cut by other forms of association.⁶

Indian cities also preserve the traditional pattern, partly because people cling to old residential areas which are based not on income but on caste, occupation, religion, kinship and ethnic origin. Each area is often identified with definite cultural factors and a specific system for regulating the life of the area.⁷ This even happens in traditional villages, which also consist of wards with their own headman, and shrine, segregated by caste, occupation or whatever, and

³Ojo 1969

⁴Onibokun 1970

⁵Plotnicov 1972

⁶e.g. Epstein, 1969

⁷Anderson and Ishwaren 1965, p.65

separated by streets. The wards cooperate at the village level, the villages at the regional level, and the religious symbolism of urban form and house form are a reflection of the religious symbolism of castes.⁸ There is a clear hierarchy – Brahmins occupy the apex of the social pyramid and are near the main temple and tank, whereas the untouchables are on the outskirts expressing spatially their social distance. In each ward residence is denied the outsider and Parsees, Christians and Moslems live in different areas. This pattern still persists in large cities like Delhi where, for example, Moslems have great difficulty renting accommodation in Hindu areas because they cook and eat beef.⁹ This clear hierarchy is changing but it is a mistake to ignore this pattern in planning¹⁰ and even Calcutta is composed of areas clearly distinguishable by culture, tradition and history, language, caste, occupation, and place of origin.¹¹

6.2. Behavioural Analysis

6.2.1. Activities Histograms:

The total activities histograms, for the full time study areas, showed that although the activities could increase in second and third class areas, due to population density and social structure, other factors could change the whole picture drastically, e.g. , the existence of a grocery shop, a laundry shop, drinking water point, social events and a through traffic route to main centres. The last situation is clearly manifested in the cases of El Margania and El Safia.¹² This in turn has generated many "doing" activities, and thus a high total

⁸Mukerjee 1961

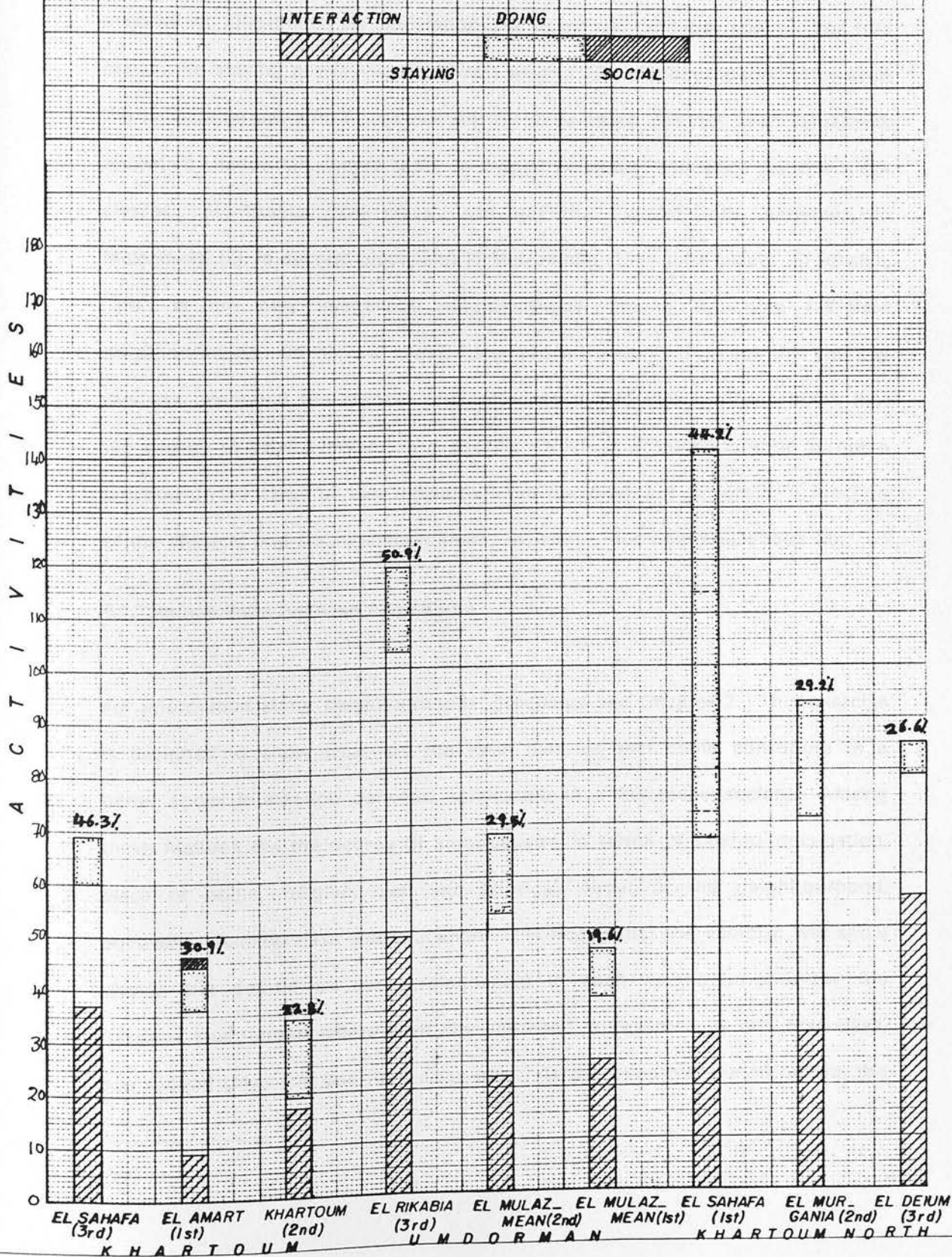
⁹Sud 1973

¹⁰E.G. Mukerjee 1961; Fonseca 1969 (a), (b)

¹¹Bose 1965

¹²Fig: (35)

Fig. 35 TOTAL ACTIVITIES



for the activities of those neighbourhoods if compared with Eldeyoum, 3rd class, in the same town. Also in the case of Khartoum (2), 2nd class, the total activities are less than Al Amart, 1st class, which is due to the fact that the majority of Khartoum's (2) population are foreigners and Christians. For this reason, its staying activity is the lowest among all neighbourhoods.¹³ However, the anticipated pattern of activities for the three cities, has not been visualised, except in Umdorman, where there is a total activities' sequence for the three classes. El Rikabia, "3rd class", has got the highest total activities, El Mulazmean (2), in second place, and El Mulazmean (1) in third place. El Rikabia, "3rd", is the only indigenous neighbourhood, among the nine full-time neighbourhoods. Its narrow alleys, have caused a minor role for the car and this has generated the highest total activities in the street. This shows that the degree of total activities in a specific street of a neighbourhood is not a function of the class of that neighbourhood (density), but in fact is a function of the physical and social environments, i.e., alleys, homogeneity, shops etc.

6.2.2. Interactions between neighbours

For information about neighbourhoods' groupings see Chapter 2. This exercise is designed to show what are the main features that could contribute to a better social interaction between neighbours in a Sudanese society. Among these features are the degree of homogeneity, in terms of kinship, occupation, place of origin, religion, clan and physical layout of the neighbourhood, population density, class and education. It is hoped that the exercise will show clearly, the degree of social relationship in each neighbourhood, for the full-time study areas, where each city has been represented by one first class, one second class and one third class area. As has been mentioned before, the

¹³ Ibid

entire study is based on the assumption that the residents of Greater Khartoum are more or less culturally homogeneous. This, the data has supported, at least up to now religiously, in that, more than ninety per cent of the residents are Muslims. The histograms, Fig (36), are presented in a sequential magnitude, from the higher, median to the lower. This in terms of study areas, the first group, (first three neighbourhoods), represents Khartoum, the second group represents Umdorman and the third represents Khartoum North. However, Tuti has no representation. Since it is a small village, it is considered a third class, and studied on a part-time basis.

The general physical layouts of the majority of the nine neighbourhoods are grid-iron patterns, with comparatively wide streets, except El Rikabia. However, the population density varies depending on the class of the neighbourhood and number of plots per each study area, (80 – 100m).

The first group, which represents Khartoum, has a regular pattern, of interactions between neighbours, which matches our expectations.¹⁴ El Sahafa, (3rd class), has the highest social interaction between neighbours (74.9%), with Khartoum (2), (2nd class), in second place (19.7%) and El Amart, (1st class), in third place. However, the social interaction scores of the three neighbourhoods is not proportional to their classes, for the following reasons:

1. El Sahafa is tribally homogeneous, and a baby was born on the study day. This event generated some social interactions between neighbours.
2. Most of Khartoum's (2) residents are originally Egyptians who immigrated to the Sudan in the fifties and sixties. The

¹⁴Fig: (37)

majority of them are Christians. Thus we could say that relatively that it has homogeneous residents.

3. El Amart has got low density, and more or less has heterogeneous residents socially, but homogeneous occupationally.

The second group, which represents Umdorman, has clearly striking variations, which are due to the following reasons:

1. El Rikabia, (25.3%) is an ancient and very old neighbourhood, dating back more than one hundred years. Through time it had been inherited by many homogeneous generations, the effect of which has resulted in the division of the small plots, according to Islamic Law of inheritance,¹⁵ into even smaller plots. Accordingly, many large families found it very difficult to continue residing in these houses. So, they either sold or rented their houses to comparatively smaller families, from different regional backgrounds. This process is very dynamic and is occurring daily. In this way the neighbourhood had lost its tribal homogeneity. Thus, its social interactions have been lessened. Despite this fact, there is still reasonable and acceptable social interactions between neighbours, which could be attributed to the physical pattern of the neighbourhood. The clustering and intermingling of houses, the low presence of cars, and the cooling effect of the physical pattern have made it possible to create some type of social interaction. However, one

¹⁵Chapter 3

can't say precisely that it is only the physical pattern which creates such social interaction. But it helps and simplifies the process, if in the first place residents are willing and interested in such a social relationship. Otherwise they will keep a low profile or stay at home, as has been demonstrated above.

2. El Mulazmean (2) (51.8%) is one of the oldest second class neighbourhoods in Greater Khartoum, allocated by the British in the forties for the junior indigenous civil servants, most of whom are retired nowadays. So the high social interaction between residents is due to the past occupation homogeneity, which had been established more than forty years ago, at a time when there were very few educated people, and civil servants.

3. El Mulazmean (1), (22.9%) is a new neighbourhood comparatively in its existing setting in Umdorman city. The residents are a combination of political leaders, senior civil servants, and business men, representing the different regions of the Sudan. Thus no specific homogeneity could be attributed to it. For this reason it has a low social interaction profile. The two El Mulazmean neighbourhoods, 1st and 2nd, have been built after demolishing an ancient Mahadists' neighbourhood, and are both named after it.

The third group represents Khartoum North. It also has some irregularity, between El Murgania, 2nd, and El Safia, 1st, for the following reasons:

1. El Murgania (12.7%), is recently established, and is considered the first and old second class neighbourhood in

Khartoum North. It intermingles with a third class neighbourhood, so it neither has an occupation or income homogeneity, nor a tribal or kinship one.

2. On the other hand, El Safia (30.0%), is also the only old first class neighbourhood in the city. The majority of its residents are business men and merchants, mostly coming from the Northern region. So it is homogeneous, both occupationally and regionally.

So, although El Murgania is second class, and supposedly should have more social interaction, than El Safia, first class, this in fact has not materialised, due to the reasons mentioned above.

El Deium (57.3%), is a third class neighbourhood, established by the British in the forties. It is allocated for unskilled labourers, who came from different parts of the country, many from western Sudan. Through time, the residents managed to establish very strong social relationships. Although they represent the whole country, they have strong social interaction. One could argue that in such cases not only the occupation homogeneity has generated such very strong social interaction, but it seems that in such circumstances the poverty situation and the scarcity level have contributed very much in generating such social interactions, because people do need each other in fulfilling their lifes daily needs, thus they share each other's amenities and spaces. This kind of reciprocal need strengthens the social relationship between neighbours.

Thus it could be concluded that social interaction between neighbours in a neighbourhood setting is a matter of homogeneity rather than the class of the neighbourhood, although the physical pattern could have some negative or positive implication as the case of El Rikabia. These two facts in turn

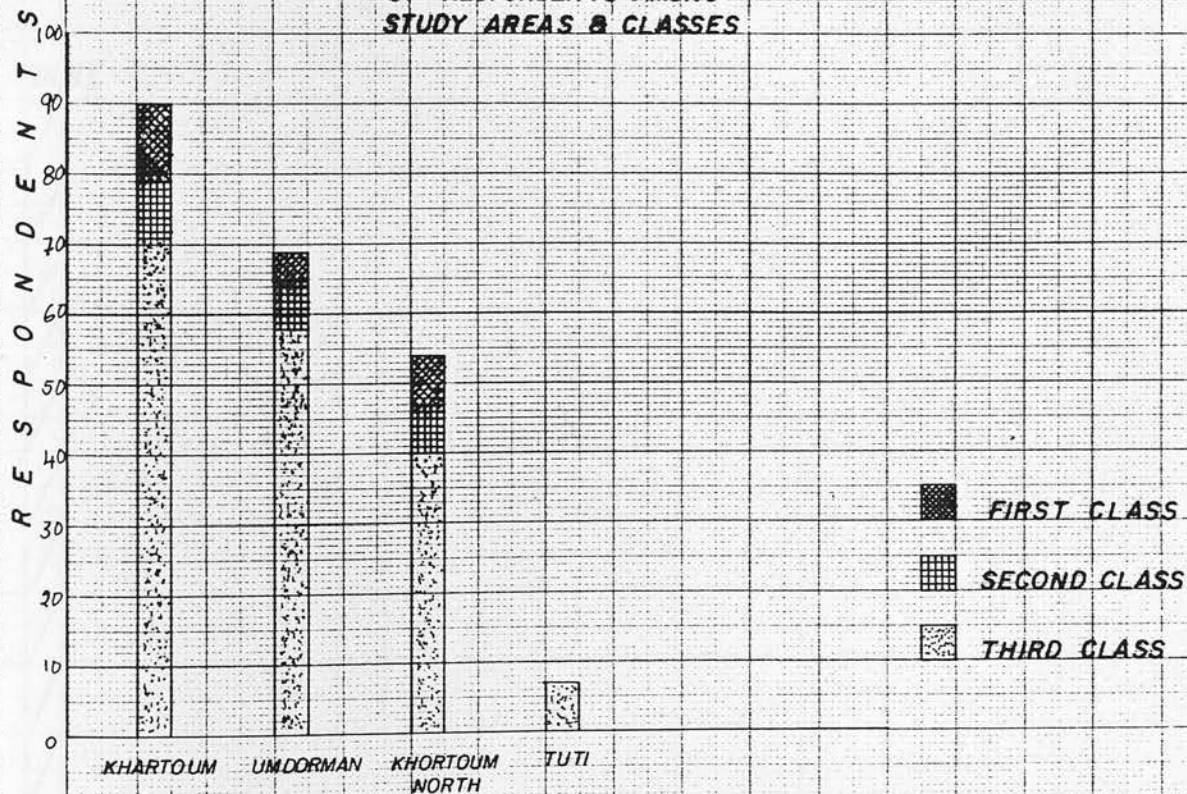
strengthen and support the central assumption of the study.¹⁶

6.3. Summary

- The social structure of the neighbourhood (homogeneity), and possibly its population density have mainly contributed to the total activities observed in a pre-determined part of a specific street in that neighbourhood. However, there are other factors which could change the whole pattern drastically, such as the existence of the following features: a grocery, a laundry, drinking water points, social events and through traffic.
- Khartoum (2), has the lowest staying activities; because, the majority of its residents are originally foreigners and Christians. They probably preferred to carry out their activities inside the houses. This could be seen as one of the influences of culture on its people.
- The anticipated total activity sequence patterns in the three cities, did not come about, except in Umdorman and this could be attributed mainly to El Rikabia, an indigenous neighbourhood.
- The degree of homogeneity in terms of tribe, clan, kinship, religion, place of origin and the planning layout of the neighbourhood could contribute to a better social interaction between neighbours in a Sudanese society.
- Along the three study areas, "Khartoum, Umdorman and

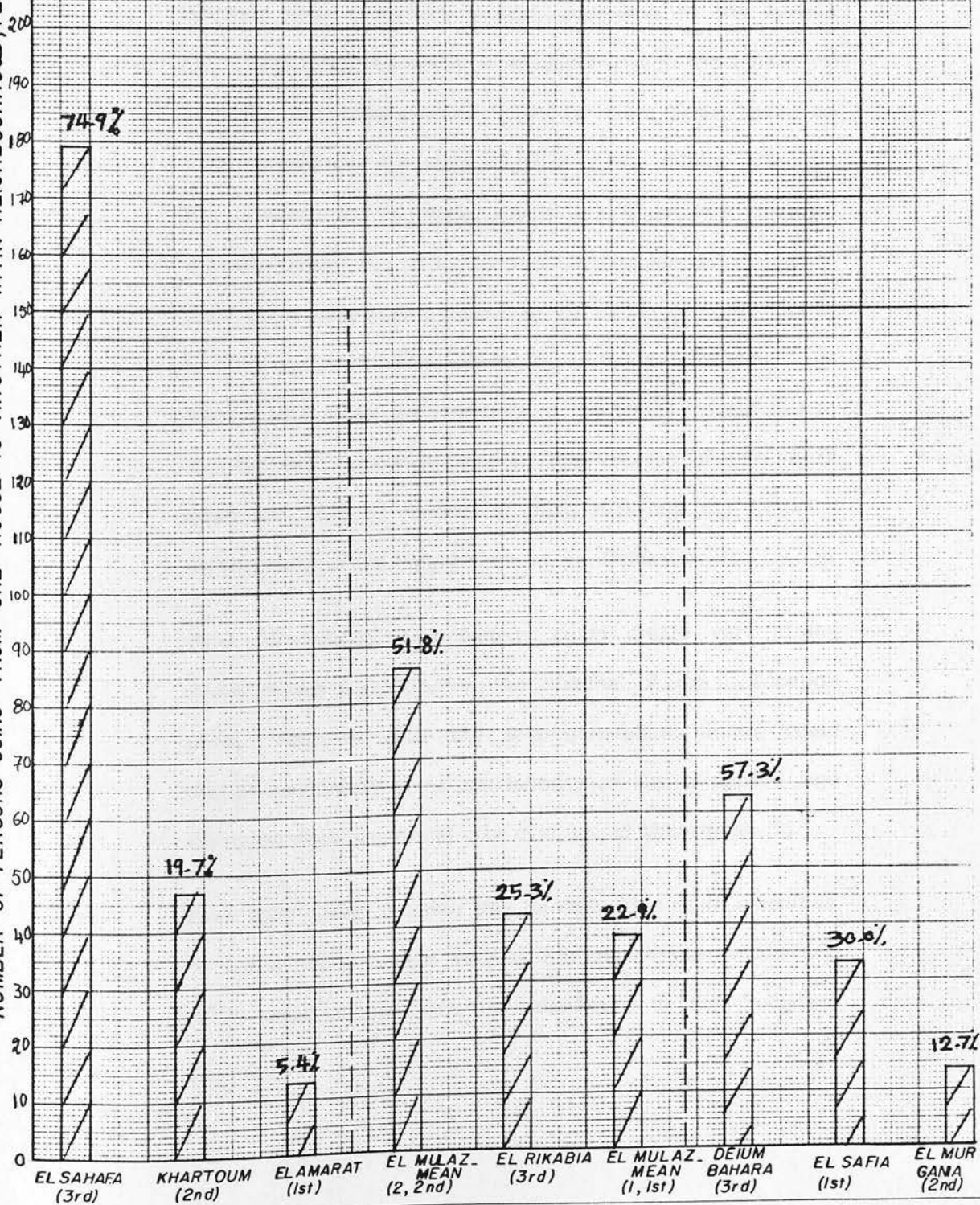
¹⁶Chapter 4

Fig:36 SHOWS THE DISTRIBUTION
OF RESPONDENTS AMONG
STUDY AREAS & CLASSES



NUMBER OF PERSONS GOING FROM ONE HOUSE TO ANOTHER WITHIN NEIGHBOURHOOD, PER HOUSE.

Fig. 37. INTERACTION WITHIN NEIGHBOURHOOD



Khartoum North", only the first group has matched with our expectation, and has a regular pattern of interactions between neighbours.¹⁷ The other two groups have very clear irregularities in their interaction patterns.

- In some Sudanese neighbourhoods, the young generations inherited their ancestor's houses, according to the Islamic Law. Each time, the house is divided between the inheritors; vertically, horizontally or on individual room basis, based on fixed percentages for each member of the family. Through this process, and in longer terms, the house will diminish spatially, until it can no longer sustain a nuclear family. So in most cases individual members of the family sell their shares to other members of the family, "by law", i.e., "Tuti island". In some cases, when the members of the family do not like to buy for one reason or another, their shares of the house could be sold to outsiders, thus breaking the clannish homogeneity of the neighbourhood, i.e. El Rikabia.
- Long occupational homogeneity could create very strong social relationships, during the lifetime of the occupation peers. However after the first generation, things could change completely when the inheritance law is applied, and ultimately outsiders could take over, i.e., El Mulazmean (2).
- Life's daily needs, whether that be daily food stuff, amenities, or space, could create very strong social interactions and social relationships between neighbours in the Sudanese

¹⁷Fig: (37)

society, along with the homogeneity factor, which could exist in a specific neighbourhood, i.e., El Deium.

- Islam teaches Muslims to greet each other, wherever and whenever they meet. This is intended to give mutual peace, and not a matter of knowing people beforehand.

6.4. Conclusions

1. The total activities happening in the street do not necessarily reflect the social relationship or the homogeneity of a specific neighbourhood, but could be attributed to some physical features in the built environment, such as a grocery shop, a laundry, a public drinking water point, through traffic, or rare social events. However, the degree of social relationship could be judged by the real interactions between neighbours, in the form of short and long visits. These visits could be the result of social homogeneity and spatial and economic needs between neighbours.

2. Homogeneous neighbourhoods, "occupationally and clannishly", in the Sudanese society, could be converted to heterogeneous neighbourhoods in a short scale of time, by implementing the inheritance law blindly, if parts of a house has been sold to outsiders. However the constitution does not allow such breaking down of the urban social structure, hence the law gives first priority to members of the kinship, and secondly to neighbours. If both are not interested in such deals, then the chance will be given to an outsider. This situation is the typical case of the Rikabia

neighbourhood.

3. The tiny reciprocal daily life needs in most third class areas between neighbours are usually extended to amenities and spatial needs. Such needs could create very strong social relationships between neighbours. Ultimately the neighbourhood's streets in such areas could be considered as safe as houses.

4. Large elimination and reduction of cars should be carried out in a neighbourhood's streets, through the following means:

(i) Narrow alleys

(ii) Plantation of trees in the middle of the street,

(iii) Traffic control

These could encourage more activities in the street itself, (public part), for the following reasons:

a. no speedy cars could interrupt the activities,

b. the cooling effect of (i) and (ii) creates a comfortable environment, (climatically) for staying longer and performing activities.

5. The perception, use and behaviour, [socio-cultural, climatical, (out-door activities), and psychological (contact, isolation)], in a public environment, could be affected by the size of the plot, (physical pattern), and family structure.

6. Although the personality, individual views, experience and knowledge of a person could affect his experience of public parks, it seems that the availability of such parks within one's own city of residence has a very important positive impact on his experience and perception of such parks.

The conclusions warranted by the data in this Chapter and Chapter 5, strongly resolve the sub-problem (1), and support research issue (1) presented in the first pages of this Chapter. They in turn assure the support of the central assumption of the study.¹⁸ However, some social aspects, such as the degree of homogeneity or heterogeneity or family size, have their impact on residents' playing and recreational behaviour. Thus the spatial environment is not the only determinant of such behaviour and the locations of their performance. The homogeneity or heterogeneity could be considered as the administrative part of the built environment, since it is the kind of policy decided on before the implementation of a specific housing scheme.

¹⁸Chapter 4

CHAPTER 7

THE IMPACT OF IMPORTED AND INDIGENOUS

MICRO ENVIRONMENT, NEIGHBOURHOODS

In the last Chapter, the author has tackled the question of how the Sudanese people have managed to solve the problems of the unsuitability of their built environment when they are confronted with imported and imposed ideas which are contradicting their socio-cultural daily life. The whole approach deals with the large scale of the built environment – cities. However, the current chapter is developed to a small scale and micro-physical environment in the form of neighbourhood groups across the four study areas.¹

The Main problem

People from different cultures not only speak different languages but, in fact, acquire different built environments to accommodate their diversified needs and socio-cultural behaviour. The Sudanese people are not an exception to this. So, does any attempt to change the indigenous Sudanese built environment, consciously or unconsciously, ultimately result in a different socio-cultural behaviour which might have serious social and psychological implications?

Sub-problem (2)

Do different urban forms and physical patterns, "in the form of neighbourhoods", generate different human, play, social and climatical behaviour? Or does the same behaviour occur in different settings, within the same Northern Sudan cultural context?

¹See Chapter (2)

Research Issue (2)

Because of the pattern of development in the cities, there are zones (neighbourhoods) in each city which are physically similar. Do these similar zones generate similar play, socio-cultural, climatical (out-door sleeping and cooking) and psychological (contact, isolation) behaviour?

7.1. Introduction

Barker and Wright² discovered in a roundabout way the powerful influence that behaviour settings have on people. Initially they sought to document what the everyday lives of children were like, by having observers follow individual children around wherever they went. The observers recorded in lay language what the children said and did, what was said and done to them, and where they went. The resulting records were called specimen records of behaviour. Perhaps the most important conclusion of their research, was that the behaviour of children could be recorded more accurately from knowing the situations the children were in, than from knowing individual characteristics of the children. The records show that, each child's behaviour over the course of the day varied with the immediate surroundings and that in similar surroundings, different children behaved much the same. In fact most of us are like the children in this regard; we greatly restrict our behaviour to conform to the setting we enter.

7.2. Behavioural Analysis

²Barker & Wright, 1951, pp.22

7.2.1. The Relationship Between Activities and Places of Occurrence.

In this part of the study, it is intended to give detailed information about the different activities, (interaction, staying, doing and social) in each neighbourhood.

Where do they occur, and what are the circumstances which help or prevent each type of activity to happen in a specific place?

Generally speaking, the interaction behaviour is more or less shared between all neighbourhoods to varying degrees.³ This is mainly due to Islamic teaching, which says that: a Muslim should greet his brother Muslim, wherever and whenever he meets him, but not due to homogeneity or knowing a person before hand. An exception is El Amart,⁴ where many foreigners are living. However, the places of interactions vary between neighbourhoods, as well as the interactions themselves. The former depends on the physical layout of the neighbourhood.

For example 55.6% of interactions in El Amarat (1st), took place in the public part of the environment, although only 19.2% of such interactions in El Mulazmean (1) took place in the public environment.⁵

Generally the data has revealed that the activities in the majority of neighbourhoods took place in the semi-private areas, (about 50%), due to the lack of space in yards, or the domination of the car in the street, with the exception of El Rikabia and Deium Bahari, where more than 50% of the

³(Figs. (38); (39); (40); (41); (42); (43); (44); (45) and (46). Appendices (27); (28); (29) and (30)

⁴Fig: (39)

⁵(Fig: (38)

activities took place in the public part. In the former, the narrow alleys have reduced and diminished the dominant role of the car. In the latter, the plantation of trees in the middle of the street has played the same role as that of the narrow alleys. As a result of this, residents in both cases are able to use the street, the public part, for their daily activities. Besides these factors there are other features which could affect the use of the semi-private and public parts of the street for daily activities. Such as: population density, the provision of front and back yards, the time of the day (temperature) and the cooling effect of the alleys. However the poor utilisation of the semi-private and public parts of the street is manifested in Khartoum (2).⁶ This could be due to the fact that the majority of its residents are originally foreigners and Christians, and they do not like hanging around in the street, for security or personal reasons.

Although almost all neighbourhoods have doing activity records,⁷ the data revealed by such activities are more manifested in the upper classes, rather than in third class, for the following reasons:

1. Most activities are cutting and watering hedges, cleaning cars, and the provision of free drinking-water, (*sabeah*), which is provided by charitable people for the passers-by, all of which are signs of wealth, and which are very rare and lacking in most third class areas.
2. Some of the working activities take place in the private part of the house where front yards are usually provided in upper class areas.

⁶Fig: (39)

⁷Figs: (38); (39); (40); (41); (42); (43); (44); (45); (46)

Fig. 38 ACTIVITIES & PLACE OF OCCURRENCE

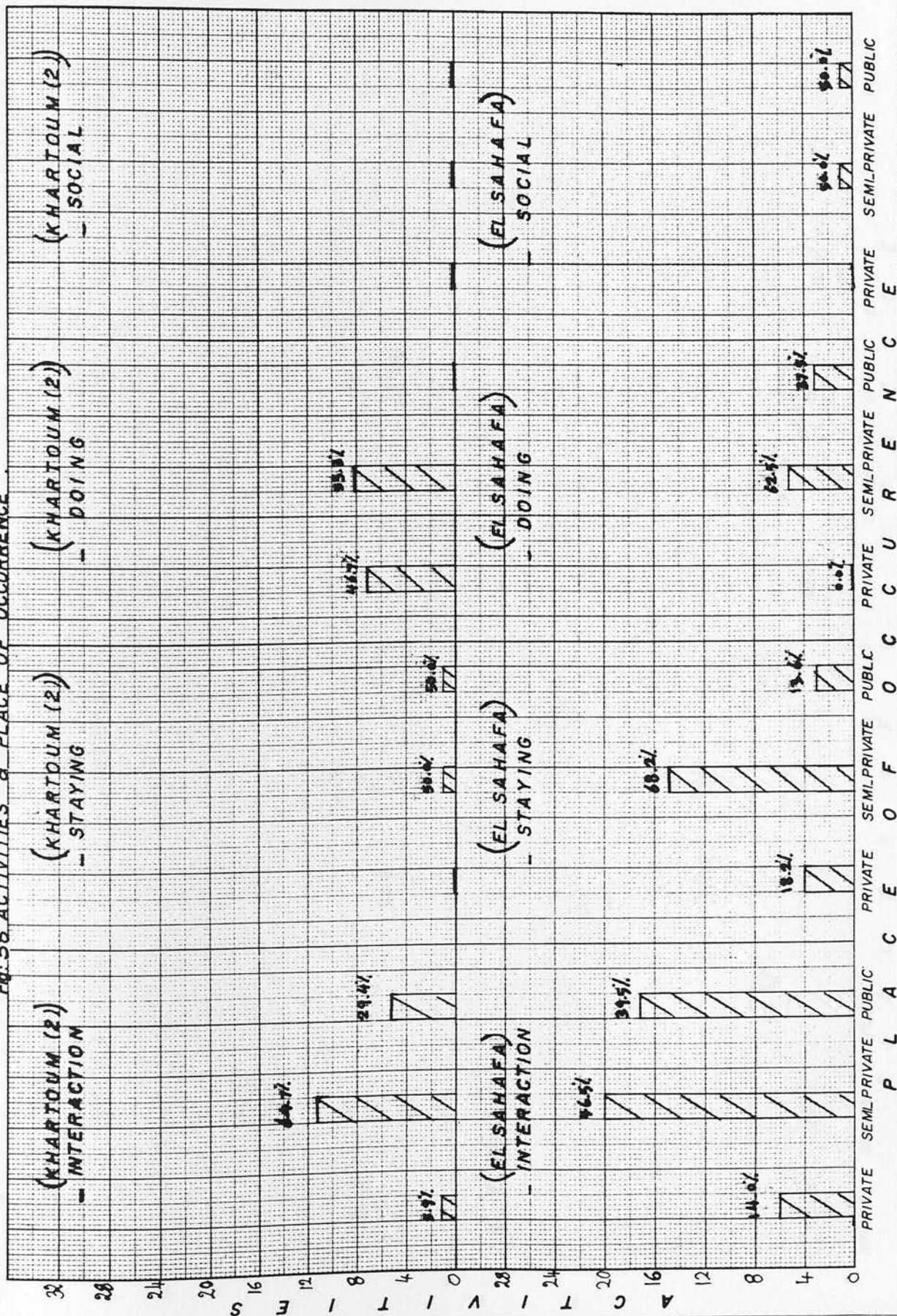


Fig. 39 ACTIVITIES & PLACE OF OCCURRENCE

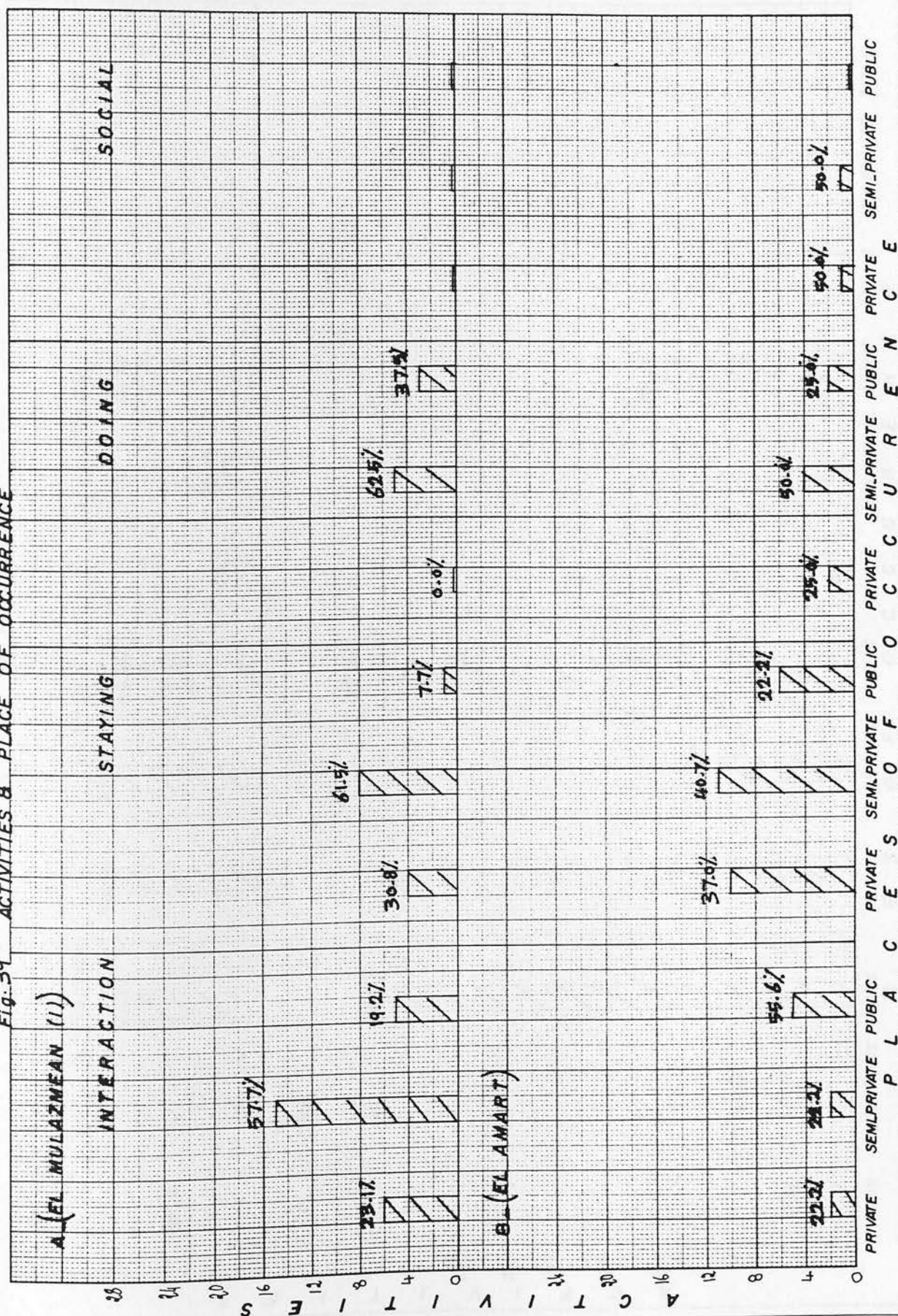


Fig. 40 ACTIVITIES & PLACE OF OCCURRENCE

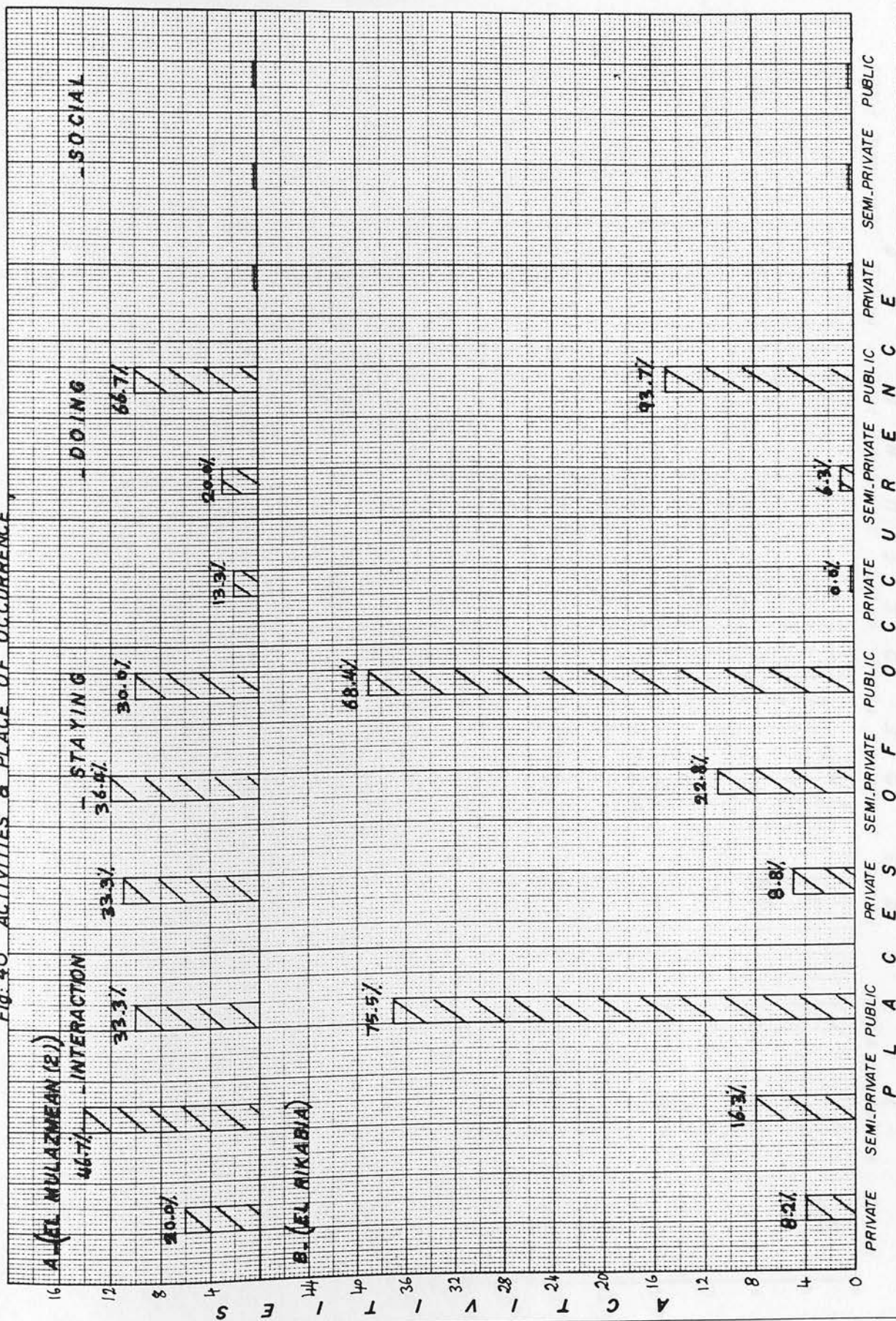


Fig. 4] ACTIVITIES & PLACE OF OCCURRENCE

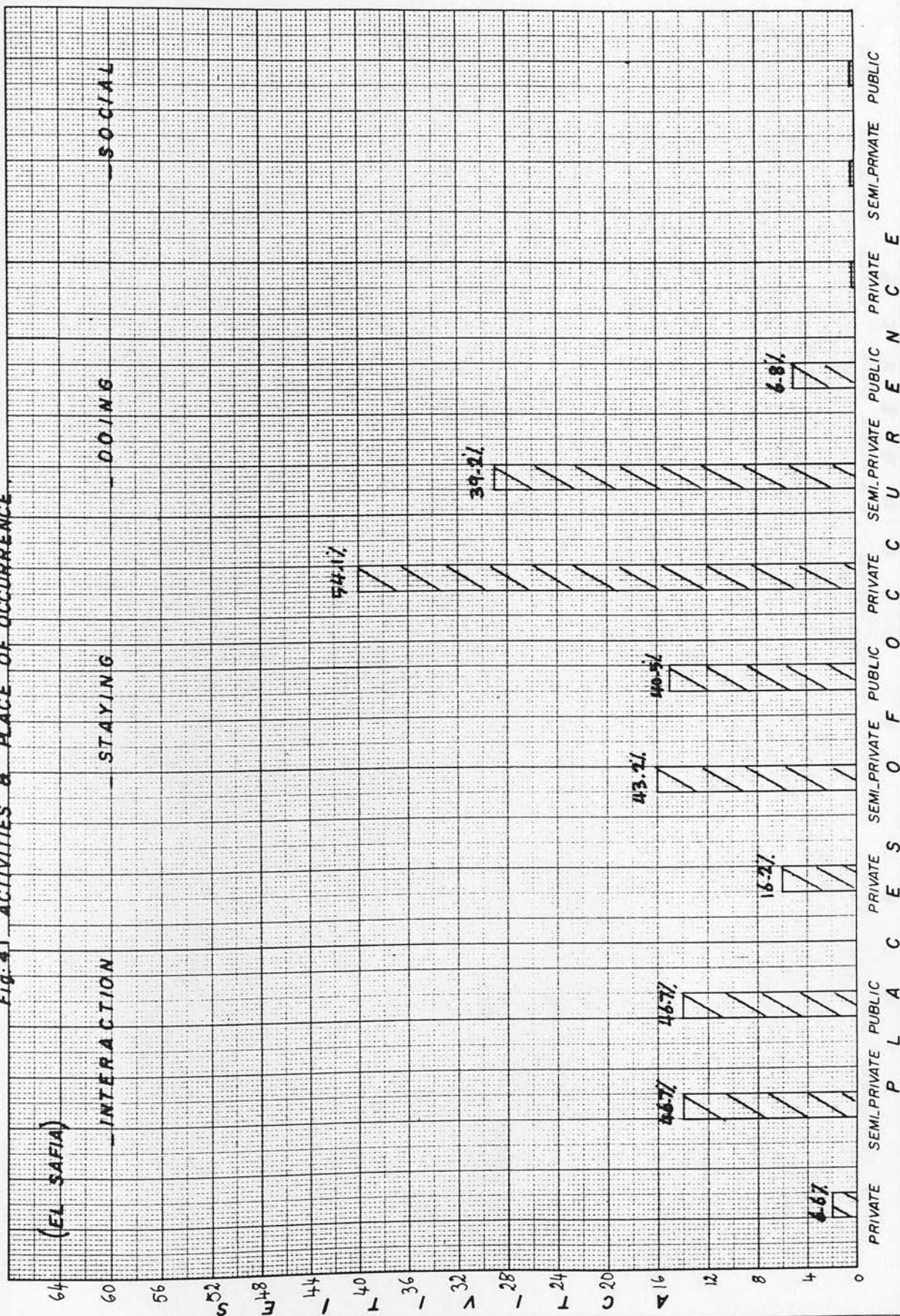


Fig. 42. ACTIVITIES & PLACE OF OCCURRENCE

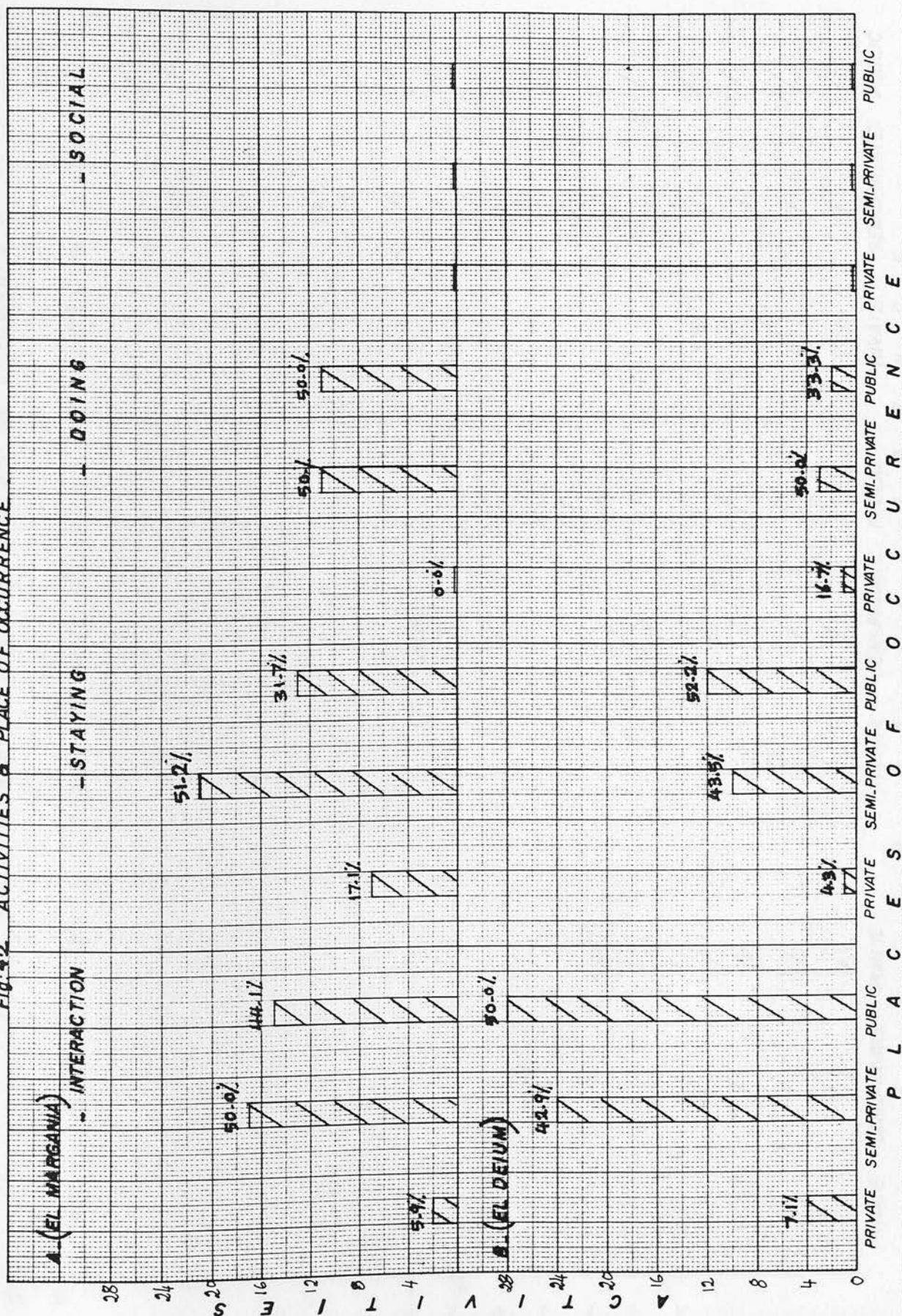


Fig. 4.3 TOTAL INTERACTION ACTIVITIES & PLACE OF OCCURRENCE

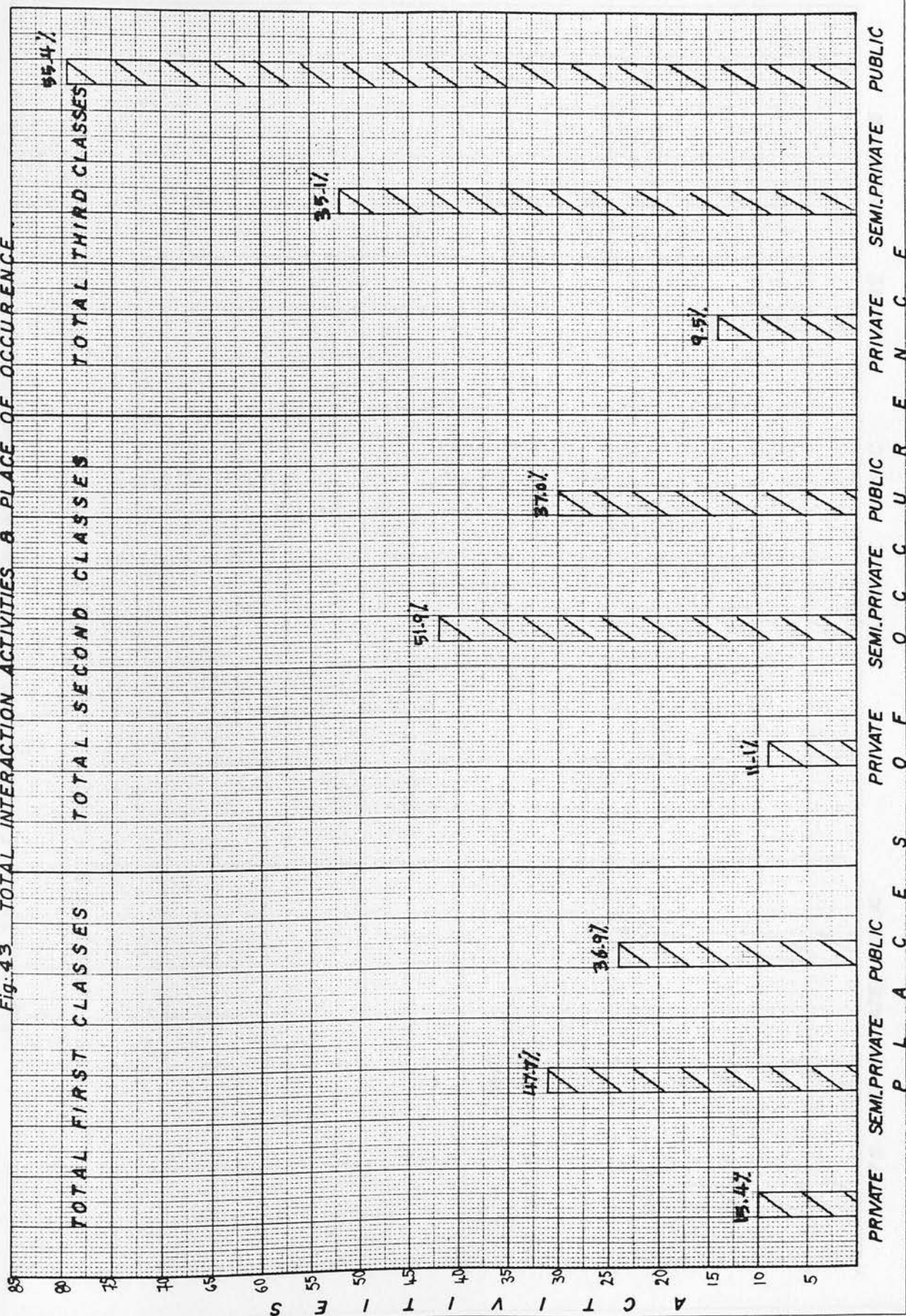


Fig. 44 TOTAL STAYING ACTIVITIES & PLACE OF OCCURRENCE

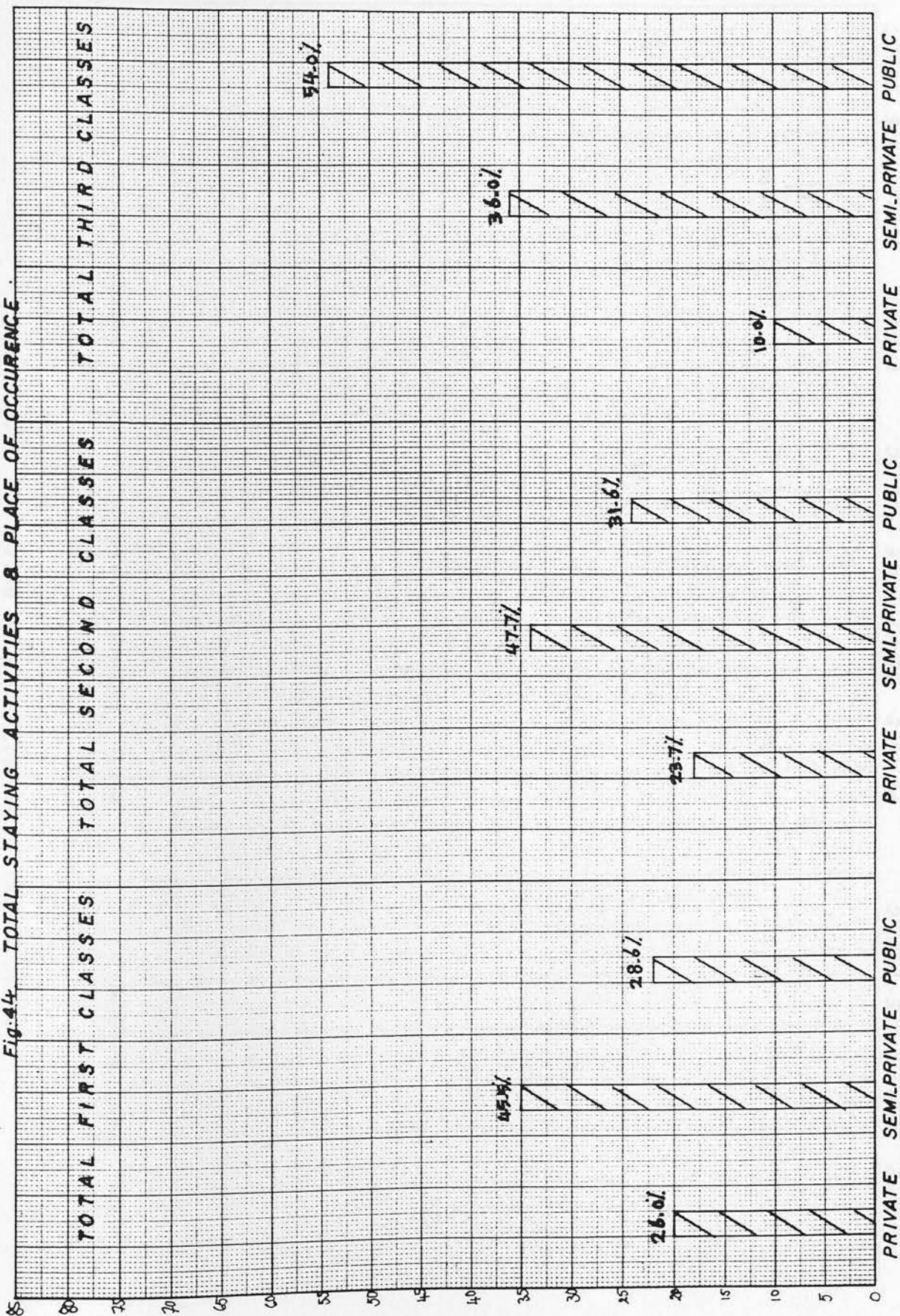
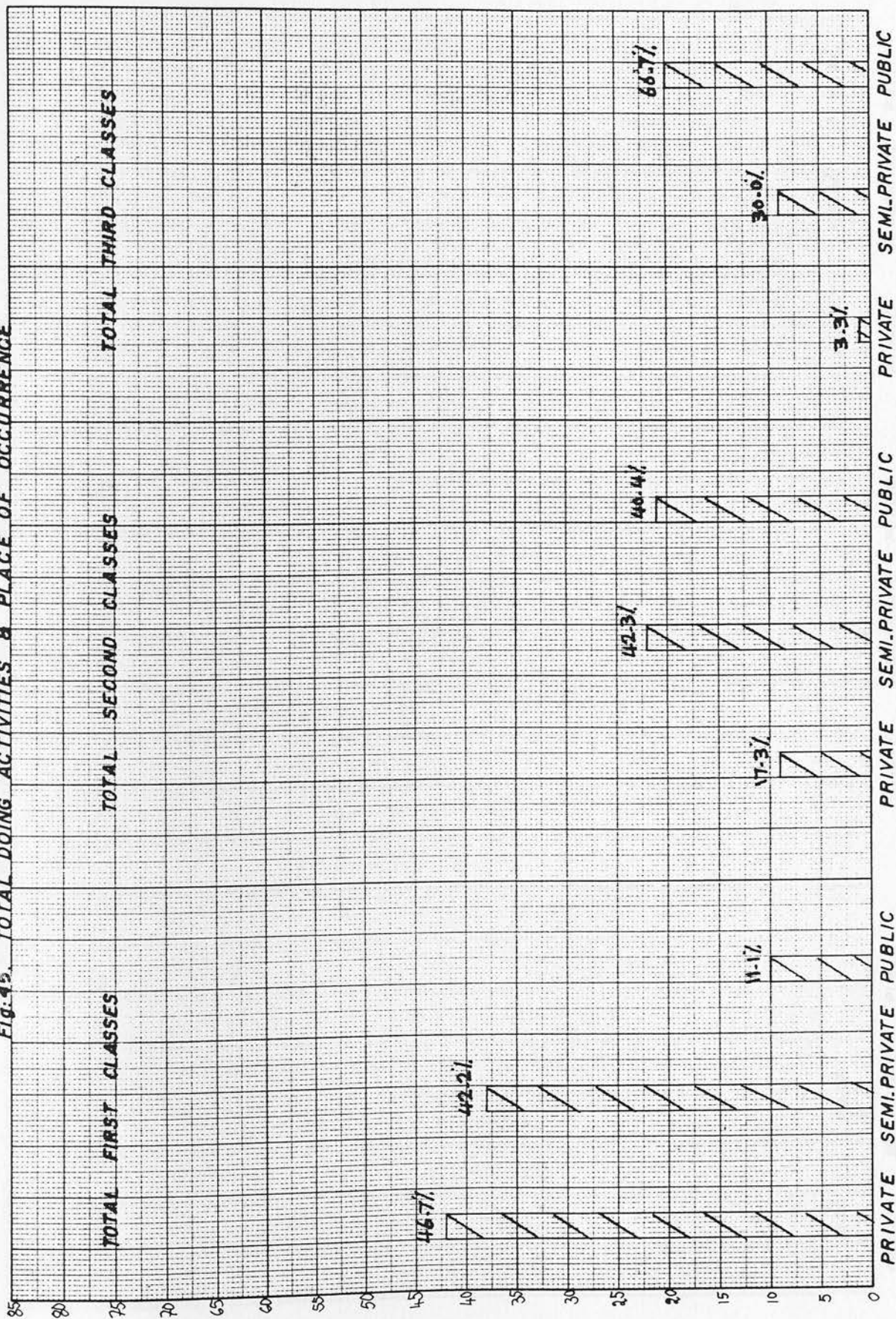


Fig. 45. TOTAL DOING ACTIVITIES & PLACE OF OCCURRENCE



3. Despite this, the provision of transparent fences in some upper class areas made it possible to record activities inside the houses. This could not be perceived in third class areas, due to the two-metre high solid walls and the lack of front yards, in most cases.
4. The cleaning and watering of front yards, (to get cooler), for evening chats and entertainments, are more possible in upper class areas, since such yards belong to residents. Residents in some third class areas do clean and water the semi-private and public areas, but this is not so common, due to them not belonging to residents.

However, the doing activity is highly manifested in El Safia, 1st class, as has been mentioned in this Chapter.⁸ The road is used as a passing route to major centres. The activities of people in cars as well as pedestrians, have generated other by-product activities, such as shopping, drinking water, resting, under the thickly shaded trees, selling fruit, vegetables and other daily requirements and chatting. Thus corner shops and free drinking water points have been established, so the street has been converted to a small shopping street.

The social activities, such as religious and ceremonial behaviour rarely happens, for the following reasons:

1. Religious activities, such as praying, could be carried out anywhere, but at fixed times. In other words, they do not require vast and spatial spaces, except in the case of group-praying, (*Mosques*), because, generally Islam has

⁸Fig: (41)

simplified worshipping, and has given the individual the right to delay, relax, or give up completely some of his religious duties if he has strong reasons.

2. Ceremonial behaviour, such as naming, circumcision and marriage occur very rarely in the life span of the family. Since they require the invitation of many people, the host families have to accommodate hundreds or thousands of invitees.

Although the rest of the neighbourhoods have been studied on a part of a day, (3:00pm to 6.30am), the results seems more or less to coincide with the relevant patterns in the whole day studied neighbourhoods.⁹ For example, Tuti, Bait El Mal, Shambat, Hilat Hamad and El Gerief West coincide with El Rikabia,¹⁰ but with slight variations, which could be attributed to the topography and physical elements in the street, (sheds and trees), the provision of yards, the plot size, the social structure of the neighbourhood, the length of residence and the degree of homogeneity or heterogeneity.

7.2.2. The Relationship Between Day Time, and Friday's Activities.

As has been mentioned before the main assumption upon which the whole study is based is that the majority of residents in Khartoum area are culturally homogeneous.

The preliminary data has revealed that more than ninety per cent of the

⁹Appendices (27); (28); (29) and (30)

¹⁰Ibid; Fig: (40)

respondents are Muslim and Sudanese.¹¹ However, do the respondents in different neighbourhoods share the same pattern of daily life or not? This is what will be investigated in this part of the study.

Neighbourhoods have been observed in two separate ways:

1. Nine neighbourhoods, three in each city which include first, second and third classes, were studied on a whole on Fridays, starting at seven in the morning and ending at six thirty in the evening. Obviously Friday is the official weekend in the Muslim world, when all residents are at home, contributing in the street activities and life. Thus we could have a comprehensive daily life of specific neighbourhoods.
2. The rest of the neighbourhoods which are mainly third class areas, with the exception of Buri, first class, have been studied during the other days of the week, from three in the afternoon to six thirty in the evening. The representation of the three cities and Tuti Island has been taken into account in this context.

The relationship between the daily activities and the exact time of occurrence, has resulted in the very significant graphs, representing both the whole day and part day studied neighbourhoods.¹² The overall picture supports the cultural homogeneity of respondents in Greater Khartoum, despite the subtle and slight

¹¹ Fig: (47)

¹² Figs: (48); (49); (50); (51); (52); (53); (54); (55); (56); Appendices (31); (32); (33); (34) and (35)

variations in the timing of some activities.¹³ However, the general patterns of the activities and their timing are more or less the same.¹⁴ These patterns are generally characterised by three types of timings, for the full-time studied neighbourhoods. Each incorporates specific sets of activities applicable to all neighbourhoods. These time patterns are:

1. From 7:20am to 11:00am, at the beginning, it is comfortably cool, where people pop in to the streets to buy some daily needs, and greet each other.¹⁵ At this stage more behaviour is recorded, very close in time, and sometimes coinciding in time. This could persist up to nine/nine thirty, then things start to change, when it becomes hotter. Breakfast is taking place sometime between eight thirty to ten forty five.¹⁶ During this time, there is a noticeable drop in activities and people disappeared for about half an hour to an hour. As has been mentioned above, this phenomenon is mainly due to the fact that people were having their breakfast. Then again, they started to appear on the scene, but not with the same density as before. Probably, some of them have decided to have rest after their meal, others preferred to stay in doors, because after ten in the morning, the temperature will start rising noticeably.¹⁷

2. The second pattern is from 11:00am to 5:00pm. These are

¹³Ibid

¹⁴Ibid

¹⁵Ibid: Activity (1)

¹⁶Ibid: Activity (2)

¹⁷Ibid: Activity (3)

the hottest hours during the day,¹⁸ when residents will stay indoors, unless they have things of utmost importance to do or they have not got a reasonably comfortable space within the house, so they are compelled to hang around in the street. After 11:00am, again activities become lesser in number and frequency. This situation extends for some time and varies between 11:00am and one o'clock in the afternoon. During this interval people are preparing themselves for Friday prayers. The preparation time varies from neighbourhood to neighbourhood, depending on the timing of prayers in each Mosque from 1:30pm to 2:00pm. Between twelve and one o'clock, people start progressing towards Mosques, individually and in groups. Thus, comparatively, there are some simultaneous activities happening in the streets. Around 2:00pm, there is a complete calmness for half an hour or more, which is the actual praying time. Then after that, there are some activities when people are coming back from Mosques. The whole sequence of events of Friday prayers is given (5), in all graphs.

Some people for some reason or another, do not say their Friday prayers, others are exempted from them. Thus, we found that dinner starts as early as one o'clock, and continues to around 4:00 pm,¹⁹ during which time residents lessen their contribution on the street activities, and remain

¹⁸Ibid; Activity (4)

¹⁹Ibid; Activity (6)

at home for dinner. After mid day, the temperature starts rising drastically between 35:° – 45°, and specifically after dinner, people feel drowsy and go for a sleep.²⁰ This afternoon sleep has a strong support in the language, which says that: "A person who had his dinner, should have stretched himself". This period extends from 1:00pm immediately after the starting of dinner, and continues on to 5:00pm, just one hour after the end of timing of dinner. Incorporated with the timing of dinner and afternoon sleep, the Elsr prayer extends from three to four pm.²¹ Good Muslims go to the Mosque for Elsr prayer. Due to this some activities have been recorded together with other unaccounted for activities. However, most people do pray at home. For this reason and that of the hot weather, the sequence of activities is not continuous during this time.

3. The third pattern of timing, extends from 5:00pm to 6:15 pm.²² It is characterised as the coolest period within the day. Thus busy life is again coming to the streets, e.g., chatting, entertaining, doing some work, cleaning and restarting business. These activities continue until sunset, interrupted only for a limited period of time for El Mugrib prayers.²³ After sunset, (6:15pm), some activities which do not need day light, will persist until midnight in some

²⁰Ibid; Activity (7)

²¹Ibid; Activity (8)

²²Ibid; Activity (9)

²³Ibid; Activity (10)

places, in others die out.

The part of a day studied neighbourhoods do share part of the second pattern of timing, between 3:00pm and 5:00pm, as well as the whole third pattern of timing.

The exercise has revealed some interesting phenomenon, which are worth mentioning:

1. Although the general behaviour patterns of all neighbourhoods are more or less similar, the densities, frequencies and numbers of behaviour vary considerably. First and second classes do have nearly vertical graphs. This is mainly due to the population density of the neighbourhood, but with the exception of El Safia and El Margania, where both are used as passing routes for cars and pedestrians alike, to main centres. However the situation in third class areas is completely different, where there are smaller plot areas, more houses and households, thus more residents in a specified length of street. The result of which is more people participating in the street activities. Thus a very gentle and ramp-form graph has been formed.
2. Within the third class areas, the pattern of the neighbourhood has a very strong impact on the resultant graph of that specific neighbourhood. On this basis, we could group the third class neighbourhoods into six groups which match to some extent with the previous groupings,²⁴

²⁴Chapter (2)

bearing in mind, the first and second class groups. These groups are:

- a. El Dangala, El Thorah and El Sahafa Group,²⁵ generally, they have very gentle graphs, with the exemption of El Sahafa to some degree. This is mainly due to the fact that after Friday prayers, residents stay in doors for a rest, because they were busy with the naming ceremony taking place on that day.
- b. Deium Bahari, El Sika Hadeed and El Hila El Gadeida,²⁶ in first and second, have typical graph outcomes, but the third, (El Hila El Gadeida), has more frequent activities, thus a ramp-shaped graph. Because the first and second are mainly working class neighbourhoods, the residents need some rest and social visits to other places. As has been mentioned before, Deium Bahari, is for workers of the main industrial estate in the area. El Sika Hadeed, is mainly for those who work in the Sudan railway lines, but El Hila El Gadeida, is basically for small private businesses. It is a local market, where locally made wine and some daily needs could be sold. However, its outcome graph is typical to that of group Four, (El Gerief

²⁵Fig: (50); Appendix (33)

²⁶Fig: (56); Appendix (31)

West, Shambat, and Tuti).²⁷

c. Bait El Mal, Hillat Hamad, El Rikabia and El Muradah Group.²⁸ These form part of group (7) in the previous grouping,²⁹ together with El Gerief West, Shambat and Tuti, these are indigenous neighbourhoods. However, this time another dimension has come into the picture – namely, whether the neighbourhood has undergone any changes, amendments or renovation, The former four neighbourhoods mentioned above have in fact undergone some changes, to cater for the essential technological services, i.e. (Water supply, electricity, telephone lines and roads for cars). Although, the latter neighbourhoods. (El Gerief West, Shambat and Tuti), have not undergone any change at all. The result is that we have two different graph outcomes, which is due to the fact that the latter sub-group has managed to maintain its kinship homogeneity and is physically unaltered. This situation has kept the residents socially intact, and the micro-climate more comfortable, (the effect of narrow alleys), thus more frequent activities and gentle graphs. Accordingly, we could consider

²⁷ Appendices (32: (34) and (35)

²⁸ Fig: (53); Appendices (32) and (35)

²⁹ Chapter 2)

this latter sub-group, (El Gerief West, Shambat and Tuti), as the fourth group in this context. The former sub-group (Group C) has less kinship and a more disrupted pattern, which allow the car to invade the neighbourhood without restriction. The result is less horizontal graphs compared with the latter group, (Group 4).

d. Falata group: to some degree corresponds with the previous groups. Most heads of households, (males), work until after six pm, thus have less contribution to the streets' activities, and comparatively, the neighbourhood has a ramp-shaped graph.³⁰

e. Umbadah group, is a moderately populated neighbourhood with less activities. As a result of this, it has a rather steep graph, typical to those of upper class areas.

3. The micro climate of the neighbourhood's streets, e.g., the effect of the narrow alleys, in keeping cool air from the previous night, as well as the existence of very shady trees has generated more activities. Obviously residents do contribute in the activities of such streets, in such environments, more than they do in streets lacking such physical elements.

³⁰ Appendix (31)

Fig:47 SHOWS THE RELIGIOUS GROUPS .

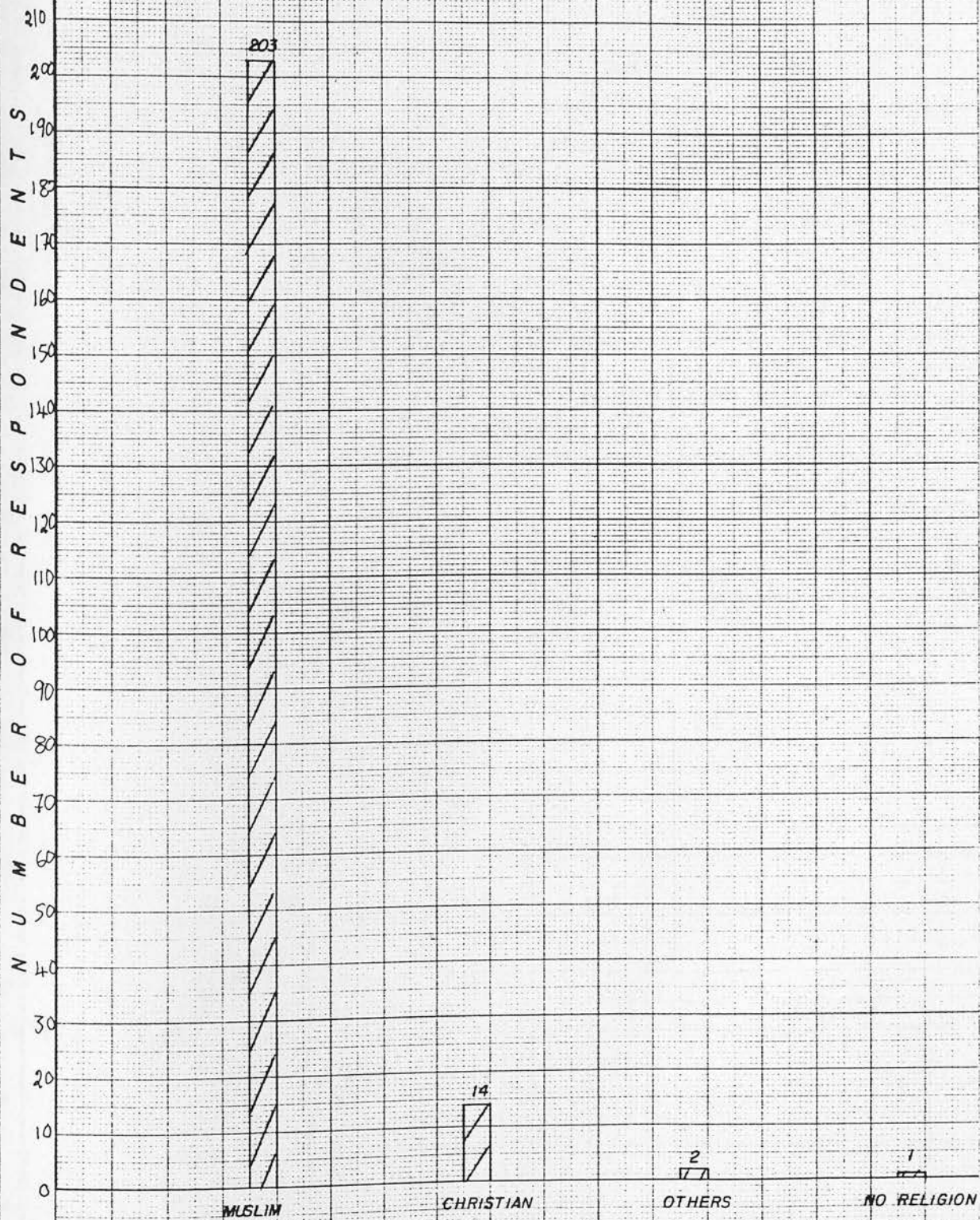


Fig:48 THE RELATION BETWEEN DAY TIME & ACTIVITIES

(EL AMART)

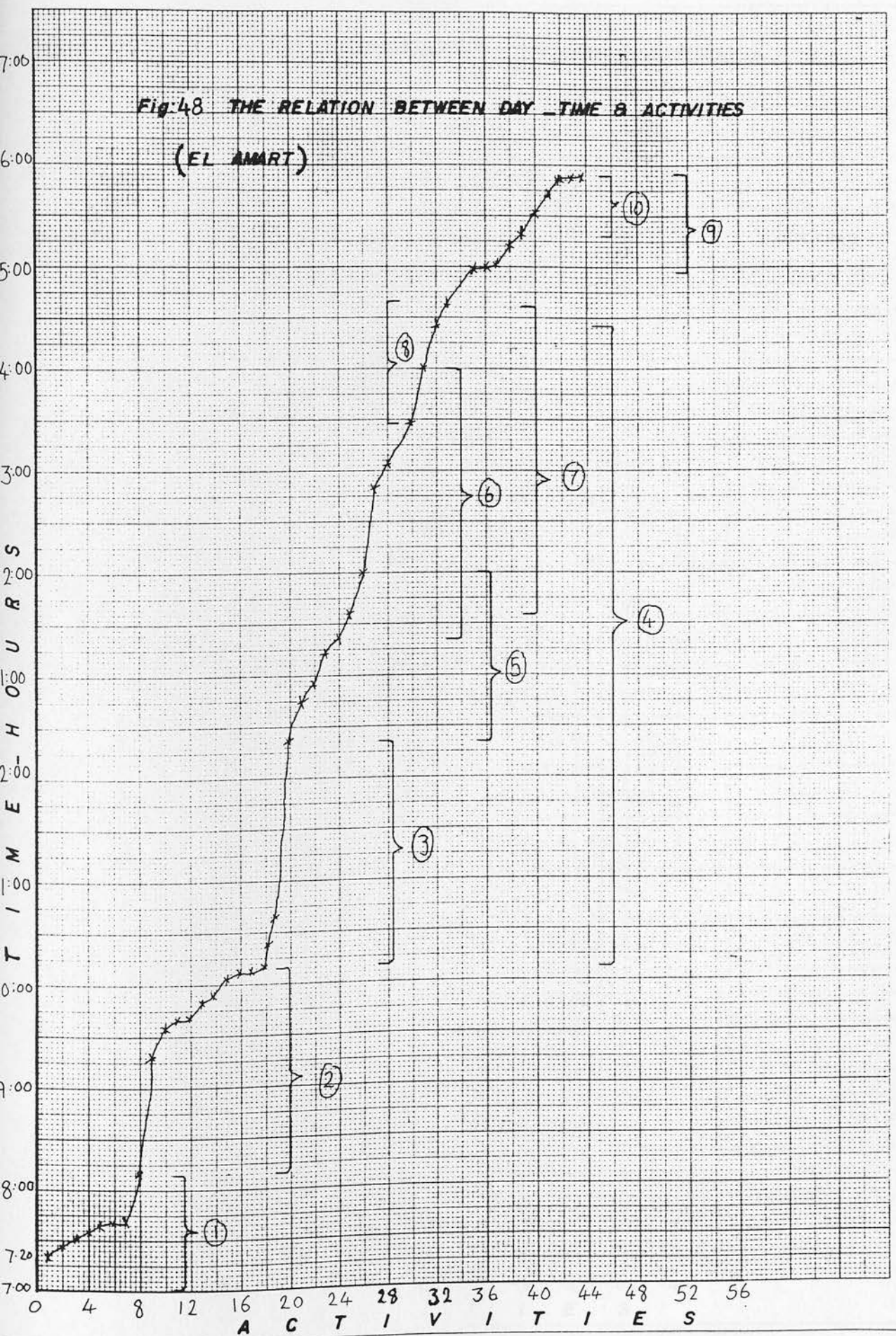


Fig. 49. THE RELATION BETWEEN DAYTIME & ACTIVITY.
(KHARTOUM (2))

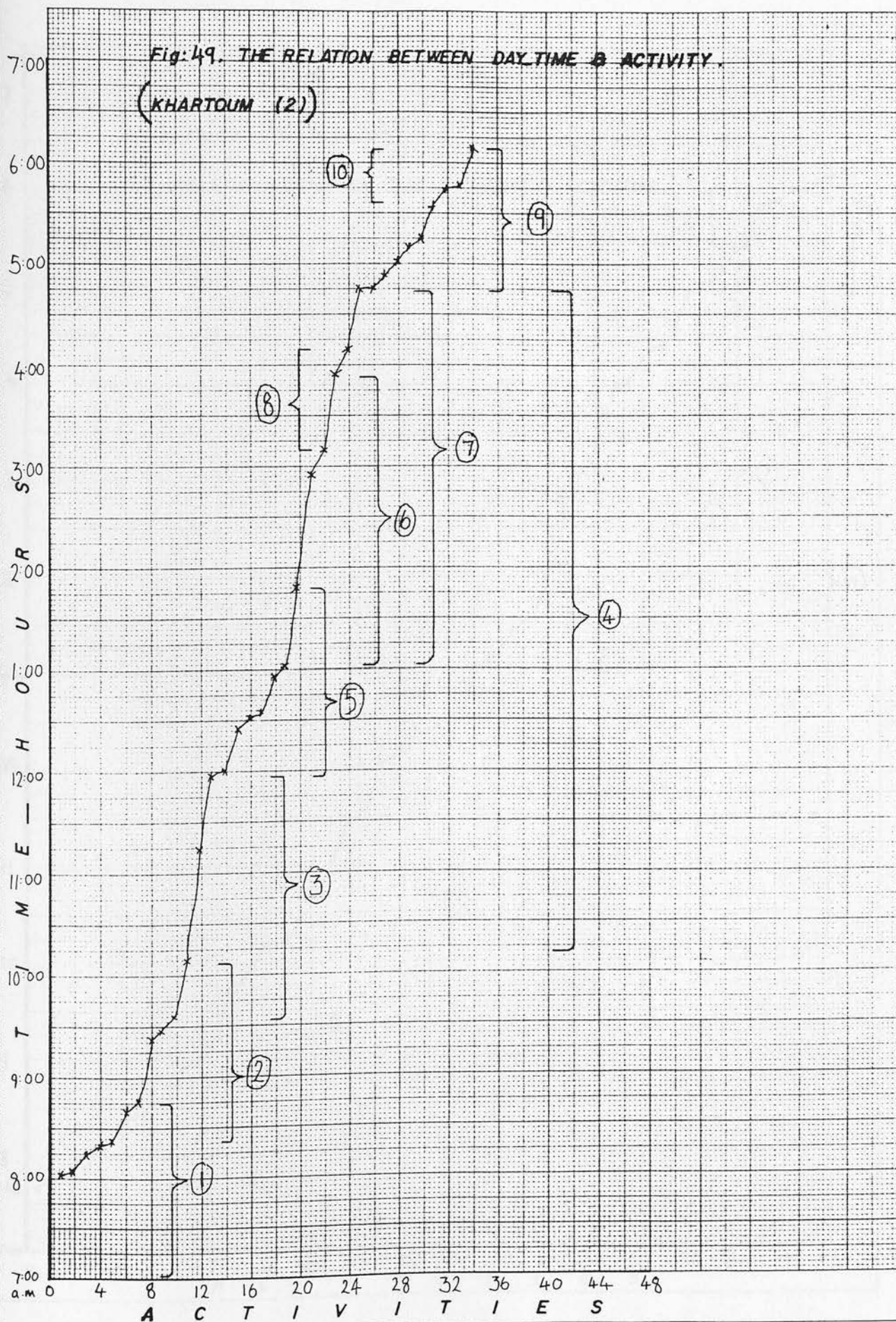


Fig. 50. (EL SAHARA)

THE RELATION BETWEEN THE DAY TIME & ACTIVITIES.

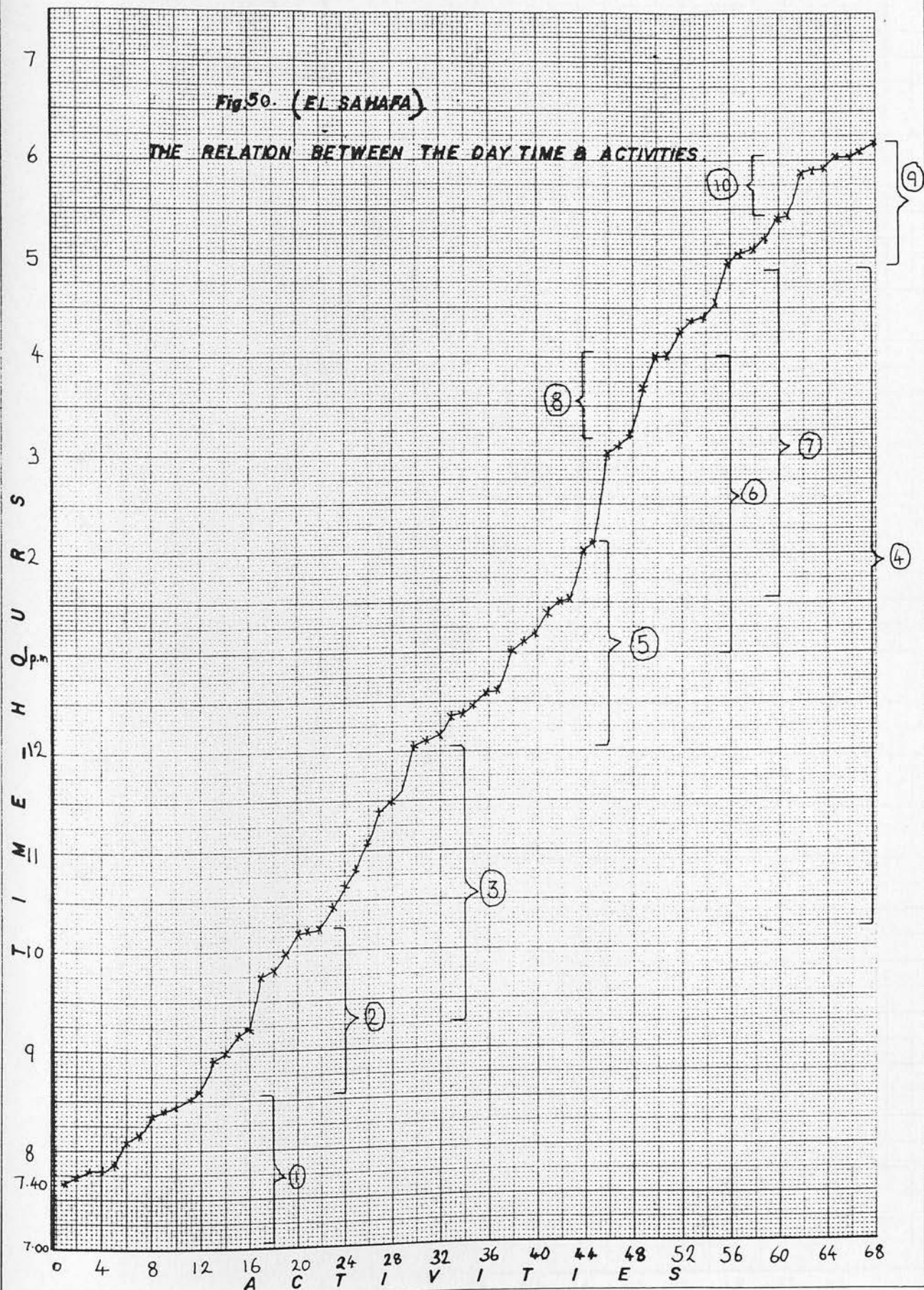


Fig. 51. THE RELATION BETWEEN ACTIVITY & DAY TIME.

(EL MULAZMEAN (1st))

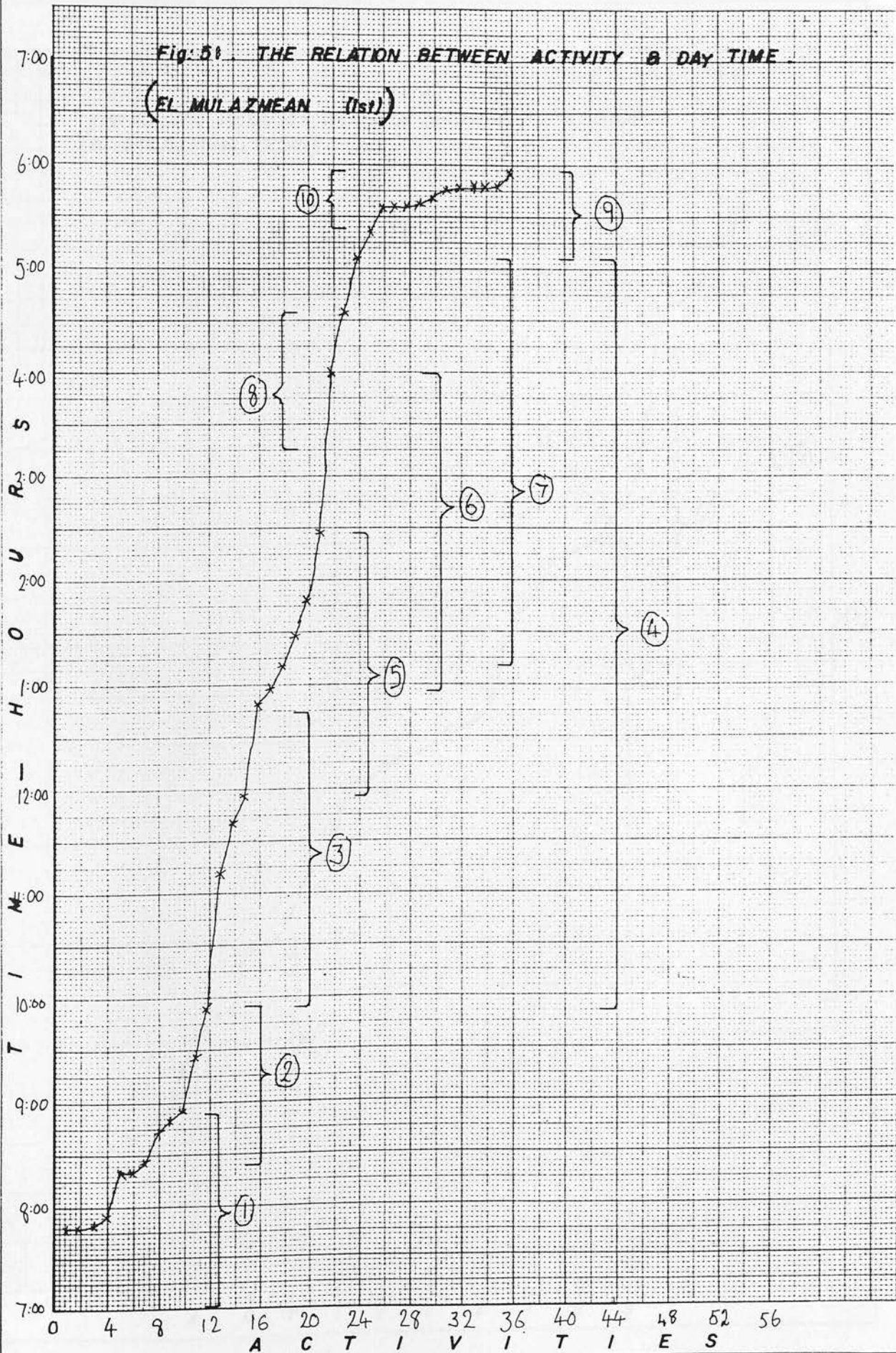


Fig. 52 THE RELATION BETWEEN ACTIVITY & DAY-TIME.
(EL MULAZMEAN (2nd))

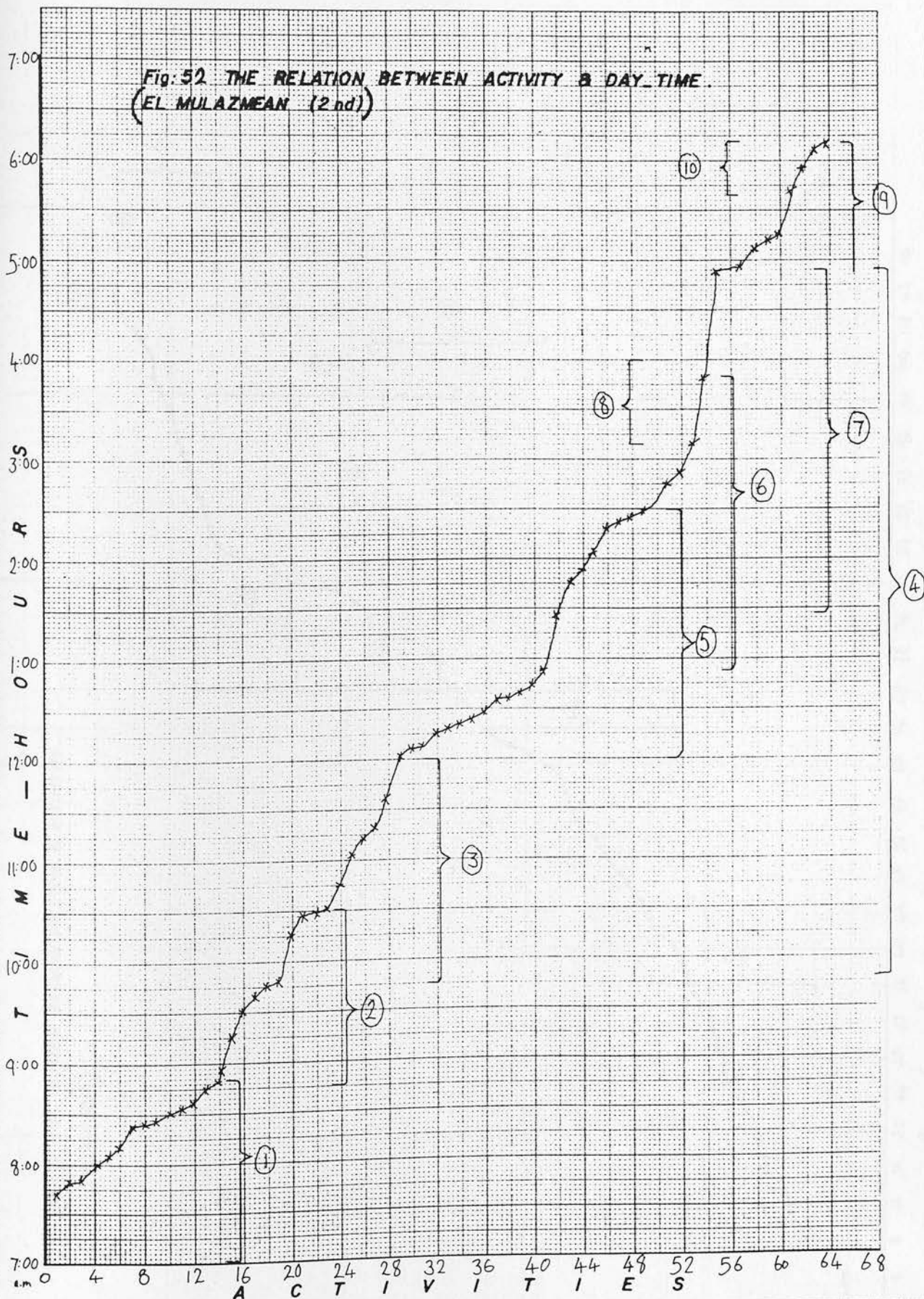


FIG-53 THE RELATION BETWEEN DAY-TIME & ACTIVITIES
(ELDEKASIA)

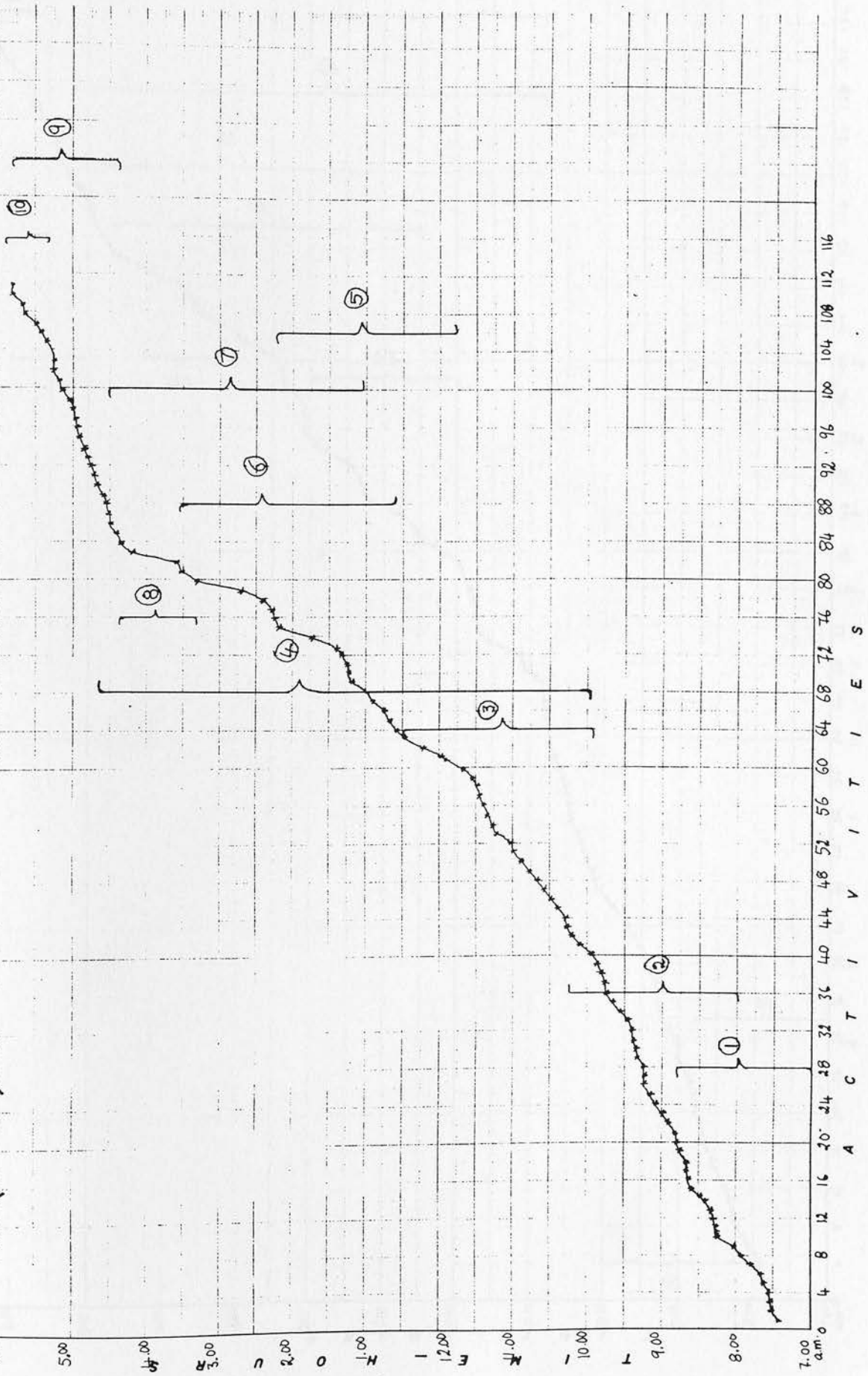


Fig. 5.4 THE RELATION BETWEEN TIME HOURS & ACTIVITIES.
(EL SAFIA)

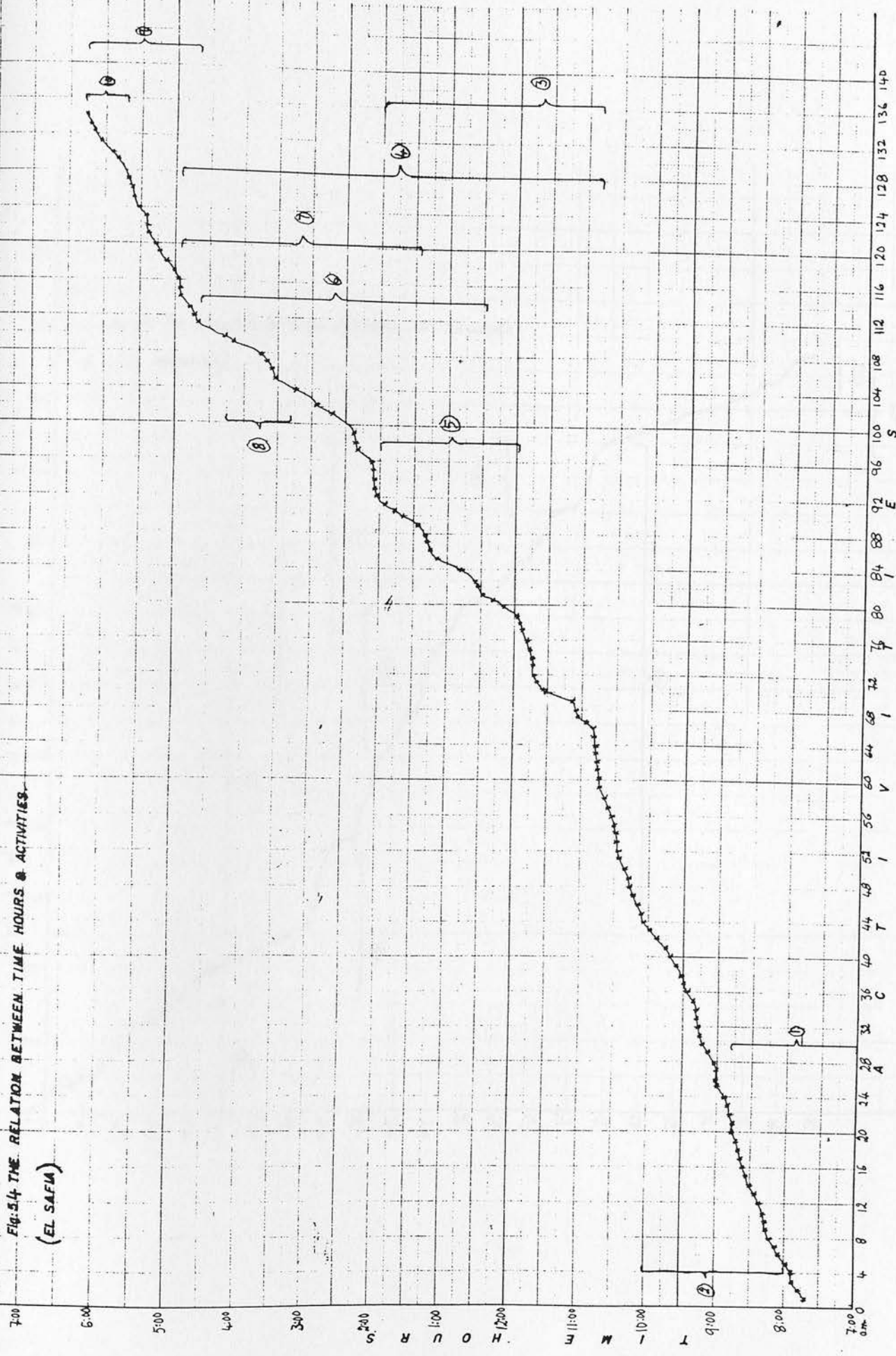


Fig. 55 THE RELATION BETWEEN ACTIVITIES AND TIME-HOURS

(EL MARSANIA)

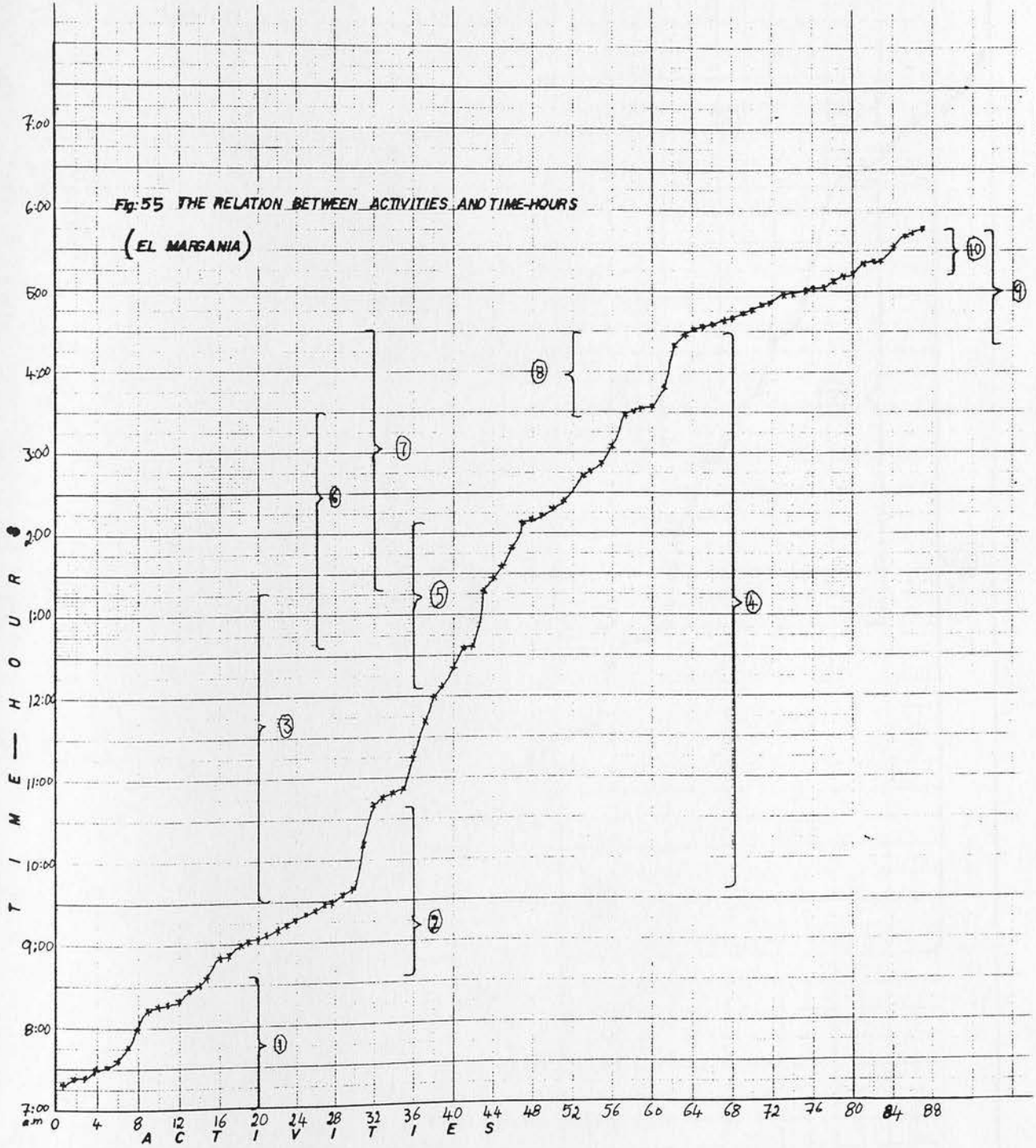
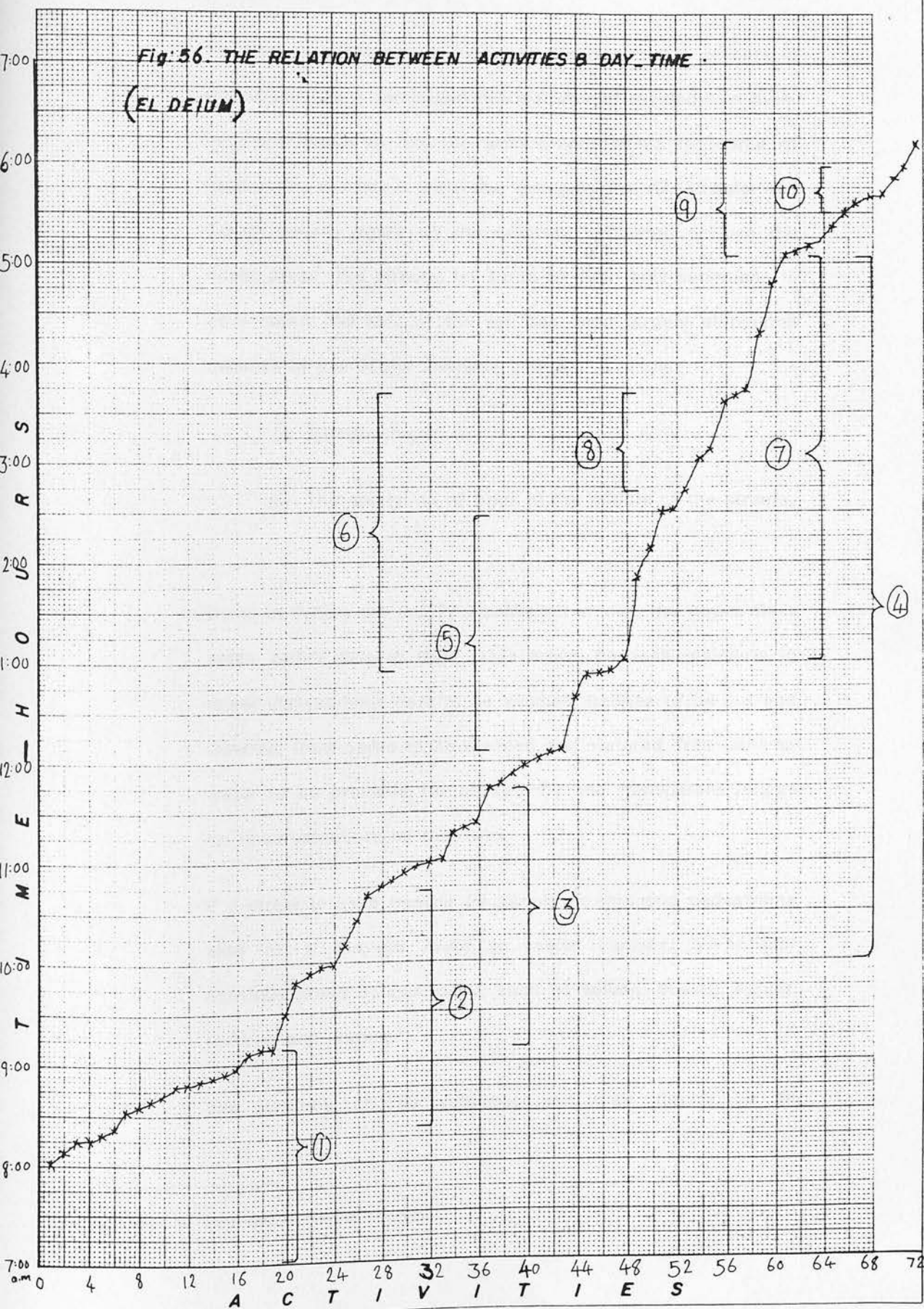


Fig 56. THE RELATION BETWEEN ACTIVITIES & DAY-TIME
(EL DEIUM)



7.3. Summary

- The lack or smallness of yards, or the domination of cars in the streets, have compelled the majority of residents in most neighbourhoods to use the semi-private areas for some of their daily activities, with the exception of El Rikabia and Deium Bahari, where on the contrary, residents do use the public areas, (the streets) for some of their daily activities. In both cases, the role of the car has been largely eliminated because of one of the following physical features:

- (i) Narrow alleys

- (ii) The plantation of trees in the middle of the streets.

- Doing activities are mainly manifested among the upper class areas, rather than in third class areas, because residents in upper classes have cars to be washed, hedges to be cut and watered, front yards to be cleaned and watered, free drinking water to be provided for passers-by and transparent fences for observations to be recorded.
- If a street is used heavily by people in cars and pedestrians alike as a through route to major centres, by-product activities could be generated, such as selling, buying, eating, drinking and resting.³¹
- The patterns of the activities and their timing, in all

³¹See Jan Gehl 1966 for similar findings.

neighbourhoods' groups are more or less the same, despite some subtle variations.³²

- The whole pattern and timing of the Sudanese peoples' daily life activities has been divided into three main timing patterns. Each pattern contains a group of culturally or climatically specified activities, both in time and space. These timing patterns are:

1. From 7.20am to 11.00am, it is the start of the daily life: comparatively cool, people say hello to each other, and obtain some of their early needs, i.e., "milk", "Activity (1)", after a quiet night. At the start of the pattern, activities are very close in time, and even coincide with each other. But with the beginning of breakfast,³³ and after it, there is a noticeable drop of activities, due to a temperature rise.³⁴ Normally the breakfast is taken, sometime between 8.30am to 10.40am.

2. From 11.00am to 5.00pm, it is the hottest period in the day.³⁵ Most people stay indoors, unless an important thing needs to be done, or residents have no alternative, but to hang around in the street, due to the lack of a reasonably comfortable

³²Figs: (48); (49); (50); (51); (52); (53); (54); (55); (56); Appendices (31); (32); (33); (34) and (35)

³³Ibid (Activity (2))

³⁴Ibid (Activity (3))

³⁵Ibid (Activity (4))

place in the house. It includes the following times and activities.

- a. Friday prayers, (12:00 to 2:30pm), preparation, going to the Mosque, actual prayers and coming back home.³⁶
- b. Dinner time, (from 1.00pm to 4.00pm).³⁷
- c. After dinner sleeping,³⁸ and it is the longest activity duration.
- d. Elasr prayers.³⁹

Noticeably, there are some variations in the timing of activities, between different neighbourhoods due to locality.

- 3. From 5.00pm to 6.15pm it is characterised as the coolest time during the day. During this time residents restart some activities, such as recreation, doing activities and social ones. Some of these activities, specifically those which do not need day light, linger on even after sun-set,⁴⁰ Also, the most limited time for prayer, (*El Mugrib*),

³⁶Ibid (Activity (5))

³⁷Ibid (Activity (6))

³⁸Ibid (Activity (7))

³⁹Ibid (Activity (8))

⁴⁰Activity (9)

usually takes place in this period.⁴¹

- Although the general behaviour patterns of all neighbourhoods are more or less similar, on one hand, the resultant outcome of the relationship between time and daily activities, had produced varying graphs, and on the other, the densities, frequencies and total number of behaviour vary considerably. These two phenomena are due to the relationship between the population density, plot sizes and neighbourhood's pattern. In the light of these factors, we could group the neighbourhoods into seven groups. Similar in many respects to the previous groupings.⁴² But with some reshifting and regrouping.
- The various graphs corresponding to the different groups are varying considerably especially between group (1) and group (4).
- The micro-climate of the neighbourhood's street, such as the cooling effect of the narrow alleys, and the existence of shady trees, can have a considerable impact on generating more people, thus more activities.
- The data revealed that more than ninety percent of the respondents are Muslims and Sudanese. This supports the main assumption of the study, that Khartoum's residents are

⁴¹Ibid (Activity (10))

⁴²Ibid (Activity (9))

culturally homogeneous.

7.4. Conclusions

1. Obviously very frequent doing activities, (such as car washing, lawns and hedge cutting and watering), in residential areas, depends largely on economic situation of the household. This means that some doing activities are characteristic of upper class areas, and others are characteristics of third class. This means that within the main Sudanese culture there are subtle and tiny behavioural differences between the different sectors of the society (class areas). These tiny behaviours have no cultural impact on the society, and form the informal aspects of the culture. On the other hand there is the formal aspects of the culture which will dominate peoples life, i.e., sex segregation etc.
2. Although on one hand, worshipping activities in Islam do not require spatial specialisation in a residential environment, and on the other, ceremonial activities do happen rarely in time. A well-planned multi-purpose space, within the residential environment, could help in fulfilling the following functions:
 - a. A safe playing area for children with the possibility of parents' close supervision.
 - b. Encourages residents to pray in groups, five times a day, which is Islamically preferable to the individual praying alone.
 - c. A recreation and entertaining place for adults.

- d. Could be used for other religious group activities, such as fast breaking in Ramadan.
 - e. Could be utilised for important ceremonial activities, such as weddings, receiving condolences, circumcision and namingceremonies.
3. The Sudanese peoples' daily life is characterised by a series of intermingling activities, which form different groups of timing patterns each group of timing pattern is either culturally or climatically specified, and composed of one or more activities.
 4. The pattern of the neighbourhood, its plot sizes, population density and social homogeneity, could cause some variations in the timing of activities, their intensity, frequencies and total number of behaviour, thus shown on the shape and profile of the outcome graph for that specific neighbourhood.
 5. Thus typical physical elements, (patterns), in the built environment, as well as the socio-cultural structure, could produce typical activities , both in space and time. So we can conclude that physical elements, (patterns), and the social structure together determine the behaviour pattern in a specific neighbourhood.
 6. The creation of a comfortable micro-climate in the Sudanese neighbourhoods' streets could help in generating

more activities, together with the other socio-cultural aspects, i.e., homogeneity. We need more lively and safer streets and neighbourhoods, free from modern urban diseases, such as crimes and vandalism.

7. Due to cultural transformation and cultural diffusion, many Sudanese families have adapted to the western spatial specialisation concept in their homes. The newly provided spaces, such as sitting, dining and living rooms, are almost redundant and poorly utilised, because of their incompatibility with the residents, both socially and climatically. To be very honest, it is time to revise the whole system, both functionally and conceptually, so as to be able to come out with a more radical solution, which will suit the needs of the grass roots of the Sudanese society, both economically and functionally.
8. Recreation in public parks and social visits are a psychological necessity for a human beings' welfare. However, when it conflicts with the basic human subsistence and maintenance of decent life, people usually go for the latter option.
9. On one hand, most interaction and staying activities take place in the semi-private part of the environment in upper class areas. On the other hand the same activities take place in the public part of the environment in third class areas. This could be due to the traffic situation in a specific street, the availability of spacious yards, wider semi-private areas or a cooler micro-environment.

We conclude that similar neighbourhoods' groups generate similar activities in time and place and more or less have similar environmental satisfaction, (Chapter 11). This fact strongly resolves sub-problem (2) and support research issue (2), mentioned in this chapter. Since the main problem and the central assumption of the study are strongly linked together and both linked to the above mentioned sub-problem and research issue as well, one can say that the data presented in this chapter supports the central assumption of the study stated in Chapter 4.

CHAPTER 8

THE IMPACT OF SOCIO-ECONOMIC FACTORS ON THE BUILT ENVIRONMENT AND BEHAVIOUR

Chapters 6 and 7 have mainly dealt with the influences that the built environment exerted on Greater Khartoum residents. The former has dealt with the macro-scale, (cities), the latter has dealt with groups of micro-scale, (groups of neighbourhoods). This Chapter deals with the socio-economic aspects of residents and to examine their influences, both on the physical environment and the behaviour of residents.

The Main Problem

People from different cultures not only speak different languages but, in fact, acquire different built environments to accommodate their diversified needs and socio-cultural behaviour. The Sudanese people are not an exception to this. So does any attempt to change the indigenous Sudanese built environment, consciously or unconsciously, ultimately result in a different socio-cultural behaviour which might have serious social and psychological implications?

Sub-Problem (3)

How do socio-economic factors, education, occupation and family structure influence the accommodation status one acquires? Consequently, does the acquired accommodation in turn influence social, playing, psychological, (contact, isolation), cognitive and satisfactoral behaviour, exerted in that specific environment, (accommodation), and respondents' future expectations?

Research Issue (3)

Do socio-economic factors, education, occupation, and family structure match

the type of accommodation (physical, spatial and social), an individual has? In turn does the accommodation an individual has influence the socio-cultural, play, psychological, (contact, isolation etc.), perception of the urban environment and environmental satisfaction behaviour, as well as future expectations?

8.1. Introduction

A.D.King,¹ in his book: "Colonial Urban Development" found that the establishment of European's goods shops first in India had important cultural effects. With the European and westernised Indian elite acting as reference groups for every day social behaviour such as were associated with eating, sitting, sleeping, entertaining and other leisure activities, a growing number of the indigenous population, having access to the necessary artefacts of cutlery, crockery, chairs, tables, curtaining, and upholstery, increasingly purchased these and incorporated them into their own forms of behaviour.

As the adoption of such material artefacts of the colonial culture increased, traditional life-styles were changed. House forms, previously adapted to indigenous values and behaviour, were increasingly affected by those of the dominant newcomer. Increasingly, two styles of behaviour developed, to be adopted for relevant situations. One, suited to the traditional environment, involved the wearing of loose-fitting, traditional clothes, sitting cross-legged on the floor, eating with fingers, consuming traditional foods and cooking with traditional metal vessels. The other, appropriate for the western or European environment of New Delhi, involved the wearing of tight fitting European dress, sitting on chairs at a table, eating with metal implements, utilising an extensive

¹King, A.D., 1976

number of vessels, consuming unaccustomed forms of food and participating in new forms of social behaviour.

An institution which at first did much to change was the hotel, of which many were built in the early development of the new capital. Each hotel, however, catered primarily for either an indigenous or European clientele, and was situated in the appropriate area of the city.

8.2. Behavioural Analysis

8.2.1. Relationship between Activities and Car Movement

It is obvious that the car movement can reduce drastically outdoor activities in many places around the world. For instance the fact that many families do not allow their children to play in the streets due to car traffic, as has been mentioned in Chapter 5. This is one of the reasons why many shopping streets have been pedestrianised in many cities around the world. So as to encourage more activities in such streets and facilitate freedom of movement.

It has been proved that, outdoor activities are a function of class in terms of population density.² Generally the movement of cars in a street could be due to car ownership, the distance to be covered, the population density, the street pattern and condition, the location of streets in relation to traffic routes, but rarely due to an event, i.e., ceremony.³

The data revealed that third class areas, (El Sahafa and El Rikabia) have less car movements, thus more activities. This is not the case in Khartoum North, where El Murgania (2nd class) has more activities, due to its pedestrians

²Chapter 6

³Ibid; Figs: (56a); (56b); (56c)

FIG: 56Q THE RELATION BETWEEN ACTIVITIES & CAR MOVEMENT

— KHARTOUM TOWN

B. (KHARTOUM 2 (2nd))

A. (EL ANAART (1st))

C. (EL SAHARA (1st))

A C T I V I T I E S

100
80
60
40
20
0

20 40 60 80 100 120 140 160 180

N U M B E R O F C A R S

FIG 156 THE RELATION BETWEEN ACTIVITIES & CAR MOVEMENT

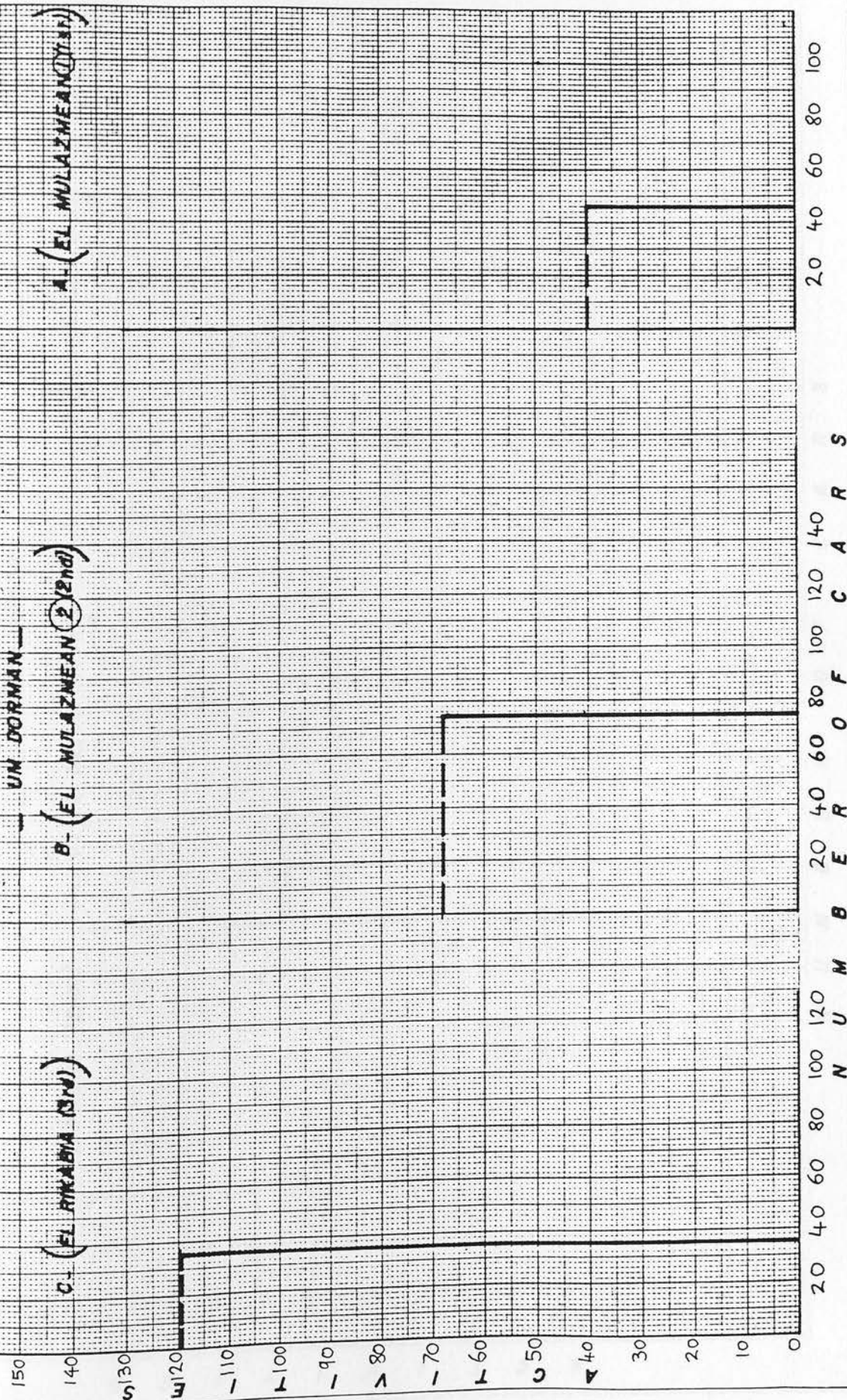


FIG 56 THE RELATION BETWEEN ACTIVITIES & CAR MOVEMENT

KHARTOUM NORTH

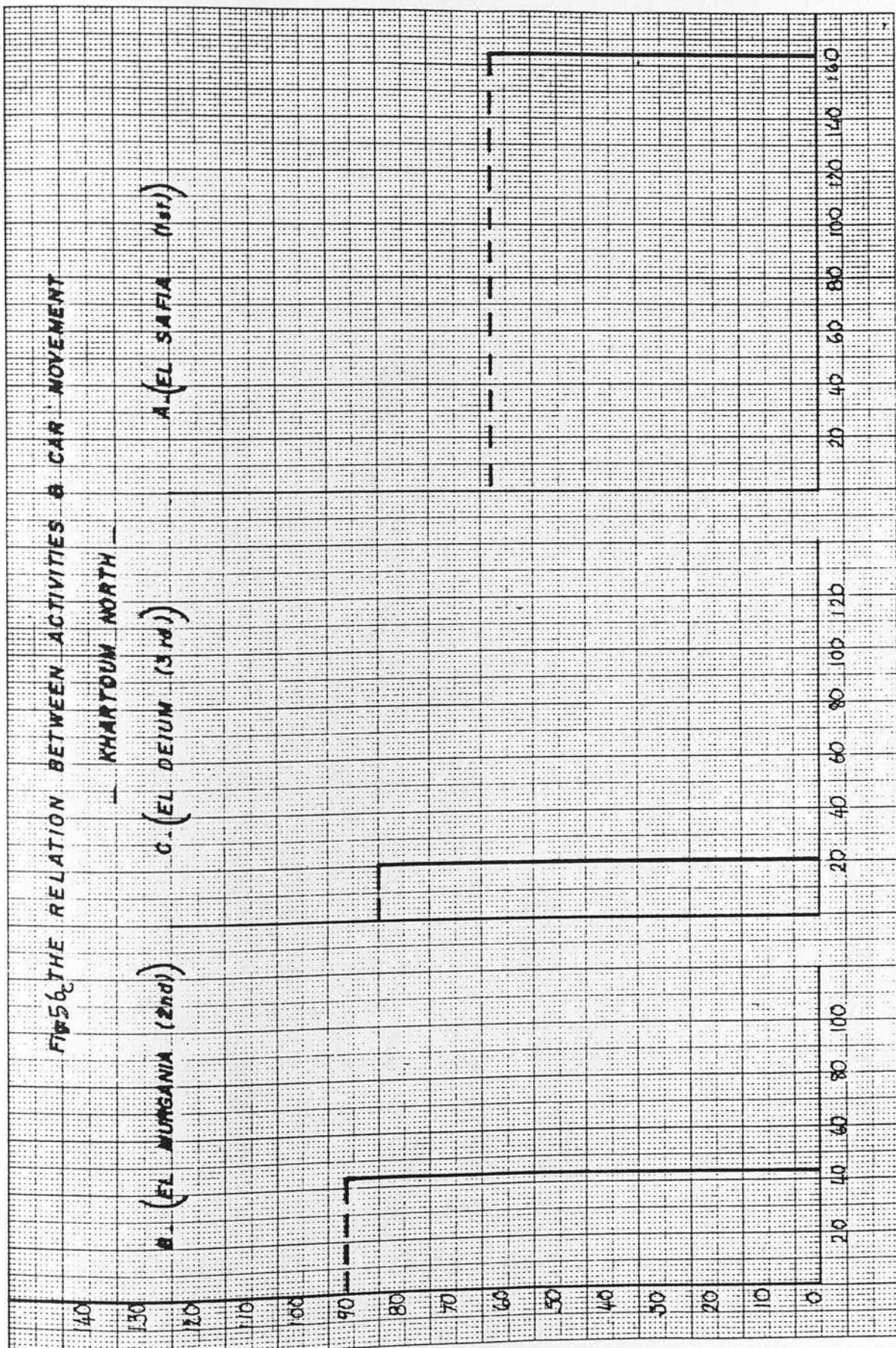
A (EL SAFIA (1st))

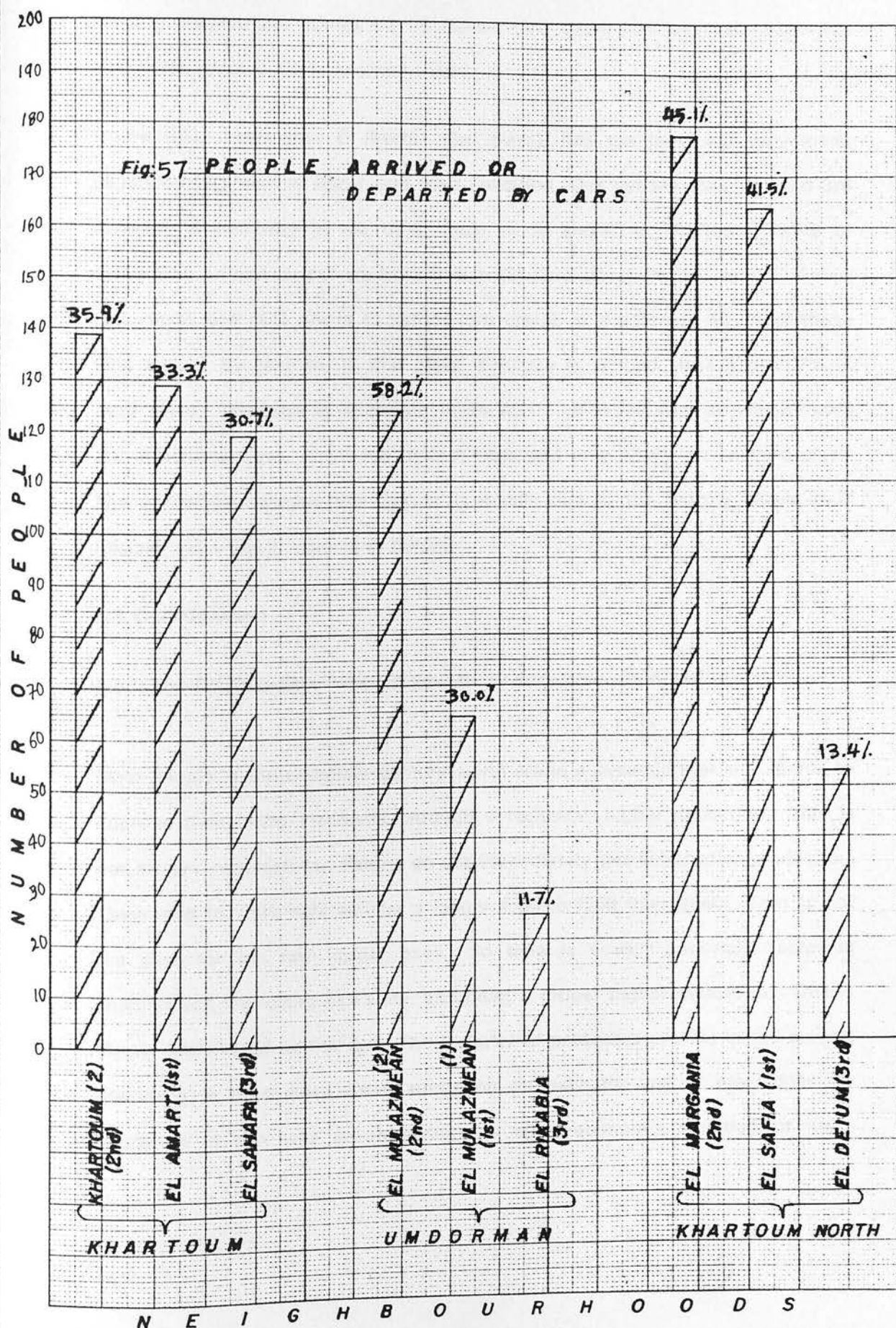
C (EL DEJUM (3rd))

B (EL MURGANIA (2nd))

A C T I V I T I E S

N U M B E R O F C A R S





passing (pedestrians' route), but El Deium, (3rd class) has less car movement due to its street pattern, (planted trees).

Figure (56) shows that El Rikabia (3rd class), has the least car movement, because of its narrow alleys, and their condition. This pattern (2nd, 1st and 3rd classes), is recurring in the three main study areas.⁴ In Khartoum 35.9% of those who arrived by car are in Khartoum (2) (2nd class), 33.3% are in El Amart (1st class), and 30% are in El Sahafa (3rd class). In Umdorman 58.2% of those who arrived by cars are in first class, 30% are in second class and 11.7% in third class. Although in Khartoum North 45.1% of those who arrived by cars are in second class, 41.5% are in first class and only 13.4% are in third class. The variations between the classes is mainly due to the narrow alleys in El Rikabia and trees in case of El Deium.

8.3. Questionnaire

8.3.1. The Relationships Between Education, Accommodation and Class

Most people in the twentieth century world are in a dynamic trial and search to improve their living standards, through a technical, higher education. This is not always successfully. People do not immediately get richer after graduation. They need to work hard and for a longer time to fulfil their goals. That is not the case for the few luckier ones. So time is a very important factor in shaping and improving one's life, assuming a proper higher education. This is clearly manifested by the data. The majority of graduates (44.7%) in the survey, are living in third class areas, struggling to reach the top of the ladder. So education is one way of improving the socio-economic situation of one's

⁴Ibid

family.⁵ However, does this process of climbing the ladder have any implications on a family's life in the future or not, in terms of playing, psychological, cognitive mapping, recreational, social, satisfactoral and expectational behaviour? This is precisely what is going to be investigated in this part of the thesis. Although this process of change is noticeable and comparatively fast among the graduates, it is slow and very rare among the other educational groups. In many cases, a rapid transition is inescapable, either from third class to upper classes, or from regional to urban centres.

Table (29a): Show the relation between class and accommodation

Accommodation	Tenure		Tenant Class	
Third	(100)	56.8% (Row) 77.5% (Col)	(76)	43.2% (Row) 83.5% (Col)
Second	(14)	63.6% (Row) 10.9% (Col)	(8)	36.4% (Row) 8.8% (Col)
First	(15)	68.2% (Row) 11.6% (Col)	(7)	31.8% (Row) 7.7% (Col)

NB: (Row) = Percentage out of the row
(Col) = Percentage out of the column

Obviously, this spatial transition should have its imprints on the activities of a family's daily life. For instance, in the case of third class neighbourhood groups,⁶ ceremonies, children's play, recreation and leisure time are performed in the streets, since there are space deficiencies within the plots. In the new environments some behaviour will be accommodated within the house plots, and less in the semi-private and public areas. Children have to get acquainted

⁵Tables (29a) and (29b)

⁶Chapter 2

Table (29b) Shows the relation between class and education

Education Class	Education					
	Illiterate	Religious	Adult	Primary	Intermediate	Secondary
Third	18.2% (Row) (32)	10.2% (Row) (18)	0.6% (Row) (1)	27.8% (Row) (49)	12.5% (Row) (22)	18.8% (Row) (33)
Class	97.0% (Col)	94.7% (Col)	100.0% (Col)	87.5% (Col)	88.0% (Col)	84.6% (Col)
Second	4.5% (Row) (1)	(0)	(0)	18.2% (Row) (4)	9.1% (Row) (2)	13.6% (Row) (3)
Class	3.0% (Col)			7.1% (Col)	8.0% (Col)	7.7% (Col)
First	0.0% (0)	4.5% (Row) (1)	(0)	13.6% (Row) (3)	4.5% (Row) (1)	13.6% (Row) (3)
Class	0.0%	5.3% (Col)		5.4% (Col)	4.0% (Col)	7.7% (Col)

NB (Row) = Percentage out of the row
(Col) = Percentage out of the column

with the new controlled playing areas, and new limited friends. The family has to adjust itself to the new situation behaviourally, (ceremonial, playing, social, psychological, cognitive, leisure, recreation, satisfaction and expectation). In other words, the family's daily mode of life, perception, thinking, satisfaction, future expectations, sleeping arrangements etc., could be changed drastically. However, the core of the culturally derived-behaviour is unchanged and unaltered. For example, ceremonies must be held somewhere for the thousands of people who must be invited, and typical rituals should be performed, regardless of the class of the neighbourhood and socio-economic factors. Since no radical environmental change is taking place, radical social changes are not anticipated. On the contrary, social patterns are relatively constant. Of course, one can affect those patterns by imposing traumatic spatial changes. By closing off all roads, by releasing poison gas, by penning large populations into very small spaces. But these are disasters and the society upon which they have been imposed will collapse or else reassert itself by reversing its man-made disaster. The social organisation built up in the course of that concerted response may be the principal permanent effect of the imposed environmental change.⁷

The general exception to this lack of connection between radical change in environment and society is an obvious one. Wherever a feature of environment is directly linked to an important social role, then the modification of the one will cause the modification of the other. The outstanding examples are economic. Enclosure of the common fields in England made it impossible for peasants to act as peasants and forced them into new roles in industrial production. Mechanisation of Southern agriculture is having the same affect in

⁷Kevin Lynch - 1972

the United States today.⁸ Another example from the heart of this study, is the segregation between sexes spatially.⁹

Also, where the change in the environment is voluntary, there may be another kind of influence on social organisation. If houses or irrigation canals are wanted or there are forests to be cleared or boats to be built and manned, then the new organisations and new leadership called into being to accomplish these aims may have a widespread social impact. Thus an effort to improve housing in the slums, using the abilities of the residents themselves, will, if it is successful, have some direct effect on their well-being, since they are better sheltered. But, it may also have important effects on their attitudes and their organisational skills and thus on their position in society.¹⁰

The data revealed that the majority of respondents are living or staying in their own houses.¹¹ However, the number of tenures is increasing towards the upper classes, and ultimately the number of tenants is increasing in the opposite direction. This shows the affordability of residents both in tenure and tenancy in all classes.

The physical environment is said to be a mirror of culture. It is probably true that in any settled society, environment and culture are adjusted to each other. They work together and we must understand both in order to understand the quality of life. However can we predict the spatial environment from the culture or vice-versa? Do similar cultures occupy similar environments? The latter question seems doubtful, except where the relation is tautological, for

⁸Ibid

⁹Chapter 3

¹⁰Kevin Lynch, 1972

¹¹Table (29a)

example, the fact that fishing cultures are located next to bodies of water. Societies often borrow environmental features from one another, without necessarily changing their own social patterns. This could be fulfilled after an implicit and delicate scrutiny and adaptation which through time, will become a cultural artefact.

8.3.2. Class and Religious Conformity

Islamically, it is required from any Muslim, if he intends to commit sins, to commit them in secret so as not to harm others, also not to talk about them later on. It could be the case that some people do commit bad deeds in the eyes of Islam, (drinking alcohol, gambling, mating etc.) in secret, but they should not dare to do them in public. However, due to the many factors, i.e., personal experience, social, world view, religious and economic, few people do explicitly commit such sins in public areas. So what concerns us here; what are the opinions of respondents concerning the impact of such misbehaviour on the contribution of families and individuals in such kind of parks?

The data has revealed that there are some variations between respondents' opinions, which could be due to personal experience, religion, social and economic factors. Also it has been revealed that there is a strong relationship between class and respondents' opinion about misbehaviour in public areas. The rejection of such behaviour is greater among the third class than in first and second classes. This is because residents in the upper classes are more tolerant due to their personal experience, and socio-economic situation, while third class residents are more religiously oriented, due to their regional background, and socio-economic factors. The same phenomenon recurs again, when comparing respondents occupations with opinion about misbehaviour in public areas. This means that those who are well-off and in comparatively comfortable situations, do not bother so much about such mis-behaviour, thus

they are more tolerant because they do not perceive the harm of such behaviour, since they have little experience of public parks. Noticeably, both relationships, (with class and occupation), coincide.

When we asked the respondents in the different classes about what types of behaviour, (social, religious, recreational) they would like to see and contribute to in public areas, the majority of them in all classes like to see accepted social behaviour, also, a small majority in all classes accept religious behaviour. A high minority went for accepted recreational behaviour.¹² This means that, people more or less overwhelmingly either agreed, or disagreed, about all behaviour, (social, religious and recreational), and with little and unimportant variations. This, in turn, suggests that the beliefs of the majority of respondents are the same, (core of culture). However, the religious behaviour has less acceptance than accepted social behaviour, because the religious codes of behaviour are well defined, well known, well manifested and unquestionable. Although, all social behaviour could be modulated with the teachings of Islam, this could be considered by some people, not to be as strong as the main religious teachings.

Table (30): Shows behaviour desired in public areas and class

Class	Social		Religious		Recreational		Others	
First	(20)	90.9%	(14)	63.6%	(10)	45.5%	(6)	27.2%
Second	(21)	95.5%	(12)	54.5%	(12)	54.5%	(7)	31.8%
Third	(167)	94.9%	(109)	61.9%	(82)	46.6%	(44)	25.0%

Residents in first and third class areas think that residential settings do affect

¹²Table (30)

behaviour, (social and doing), and a considerable minority think that playing behaviour could be affected too.¹³ Religious behaviour is not affected at all, according to them, since it is, in most cases, individually performed as has been mentioned before. However, respondents in second class areas have the opposite opinion about the effect of the built environment on social, religious, doing and playing behaviour. This could be due to family structure in relation to a plot's size and regional background.

The question needs answers here, what do people do, if they think that the existing residential settings affect their social and doing behaviour? From the author's own experience in such circumstances when people want to perform such formal activities (core of culture), they resort to different resources at their disposal;

1. By addition to the existing built environment, or rearranging it to suit their needs. Through this process people will be able to adapt the built environment.
2. By resorting to external resources, such as neighbours' house, adjacent street or open space, near or far open spaces, clubs, or family house in other neighbourhoods or towns.

8.3.3. Settings' expectations

Although the ceremonies question has been dealt with in Chapter (5), it will be mentioned here briefly in a context of a 3-dimensional table¹⁴ situation, so as

¹³Table (31)

¹⁴Table (32)

to uncover any hidden dimensions if any.

The main areas for the performance of ceremonies as concluded before are:

- (a) the street, for the second and third classes
- (b) the house, for first class.

The majority of respondents in all classes, do require some amendments to their existing built environment, and for different reasons,¹⁵. Among the first class minor amendments are needed due to a relative environmental satisfaction. However, in the second class, there is some degree of environmental acceptance. This does not mean that all classes require the same sets of alterations. Those in the first class viewed it as a matter of the provision of more facilities, i.e. recreational facilities within the neighbourhood, better roads, etc. In the second class areas, it is viewed in terms of community open spaces, recreational facilities, sewage plant, better roads, plantations etc., and in the third class areas, it is viewed as a spatial change: in the size of the plots, at the expense of the surrounding streets, along with all the facilities and services required by the upper classes.

¹⁵Table (32)

Table (31): Shows class and the impact of setting on behaviour

Class	Setting affects behaviour		Social behaviour	Religious behaviour	Doing behaviour	Playing behaviour	Others "Sleeping in street"
	yes	no					
First	(13) 59.1%	(9) 40.9%	(11) 50.0%	(6) 27.3%	(11) 50.0%	(9) 40.9%	(1) 4.5%
Second	(9) 40.9%	(13) 59.1%	(8) 36.4%	(2) 9.1%	(7) 31.8%	(5) 22.7%	(0) 0.0%
Third	(107) 60.8%	(67) 38.1%	(103) 58.5%	(24) 13.6%	(93) 52.8%	(71) 40.3%	(14) 8.0%

So, if this is the case, then one could ask why don't people in the third class and in second class areas, require new residential developments? In the first place people are socially and cognitively bound to their existing social and built environment. Besides this fact, they are more realistic, both economically and practically about requiring drastic changes which are far reaching and could not be materialised in the foreseeable future. Therefore the amendments considered are mainly spatial, recreational and hygienic. These are more realistic and practical and could be achieved, with some effort.

However, the data has revealed that socio-economic factors, (class), have an influential impact on the type of accommodation that complies with one's own class. This in turn determines the whereabouts of the performance of family ceremonies, as well as the degree of satisfaction with the existing environment. This in turn determines the type of settings or amendments required by residents for that specific group in the future.

More relationships between respondents' groups, (towns, regions, length of residence and knowledge of open spaces), and settings exception have resulted in the following findings:

1. There is a very strong relationship between respondents requiring new settlements, with the four study areas (towns), this is the most important relationship in table (33). There is an increase in the number of respondents requiring new settlements, sequentially Umdorman, Khartoum North, Khartoun and Tuti.¹⁶ This could be due to one of the following reasons:

- a. Tuti's planning pattern is the main reason that causes residents not to enjoy the benefits of technology, such as cars, sewage systems, etc.
- b. Since the early twenties, the successive governments had intended to revoke the island for the public benefit. However, all efforts have been turned down. So, based on the notion and dreams of a recreational island, the local governments do not allow building permission on the island. This in turn has contributed negatively to residents feelings' unsettledness and planning dissatisfaction.

2. Regional background and length of residence greatly influence the perception of environmental problems. Because contact between adjacent neighbours could help people understand and perceive each other's problem. This mutual understanding of problems can yield similar

¹⁶Table (33)

solutions to the same problem. This relationship has a very strong and significant relationship between regional groups and amendments required. It is the most important relation in this context. ¹⁷

Table 33: Shows the relation between settings required and towns

Town	New Towns		Amendments		Others	
Khartoum	(14)	15.6%	(77)	85.6%	(5)	5.6%
Umdorman	(2)	2.9%	(64)	92.8%	(3)	4.3%
Khartoum North	(3)	5.6%	(50)	92.6%	(2)	3.7%
Tuti	(3)	42.9%	(7)	100.0%	(0)	0.0%

Table (34): Shows the relation between regional's groups and residential settings required

Regional Groups	New towns		Amendment to existing		Others (no shops, do not need changes)	
1	(7)	8.4%	(79)	95.2%	(2)	2.4%
2	(6)	7.5%	(74)	92.5%	(6)	7.5%
3	(7)	22.6%	(26)	83.9%	(0)	0.0%
4	(2)	8.3%	(18)	75.0%	(2)	8.3%

¹⁷Tables (34); (35); (36); and (37)

Table (35): Shows the relation between length of residence and residential setting required

Length of residence in Khartoum (in years)	New towns		Amendments to existing		Others (no shops, no need)	
0 - 10	(5)	7.4%	(61)	89.7%	(4)	5.9%
11 - 20	(9)	15.0%	(51)	85.0%	(4)	6.7%
over 20	(8)	8.8%	(85)	93.4%	(2)	2.2%

Table (36): Shows settings required and class

Class	New towns		Amendments		Others	
First class	(1)	4.5%	(17)	77.3%	(5)	22.7%
Second class	(3)	13.6%	(18)	81.8%	(2)	9.1%
Third class	(18)	10.2%	(163)	92.6%	(3)	1.7%

Table (37): Shows the relation between classes,
open spaces and settings required

Class	First Class			Second class			Third class		
Settings	Open spaces			Open spaces			Open spaces		
Required	There is space	No space	No idea	There is space	No space	No idea	There is space	No space	No idea
New	(1)	(0)	(0)	(3)	(0)	(0)	(13)	(2)	(3)
Towns	100.0%	0.0%	0.0%	100.0%	0.0%	0.0%	72.2%	11.1%	16.7%
Amendments to Existing	(12)	(3)	(2)	(10)	(5)	(3)	(120)	(30)	(13)
	70.6%	17.6%	11.8%	55.6%	27.8%	16.7%	73.6%	18.4%	8.0%
Others (no shops no needs)	(3)	(1)	(1)	(2)	(0)	(0)	(3)	(0)	(0)
	60.0%	20.0%	20.0%	100.0%	0.0%	0.0%	100.0%	0.0%	0.0%

8.4. Summary

- Car movement in a specific street could be intensified by car ownership, the physical pattern and condition of the street, the location of the street in relation to traffic routes, and a rare event (ceremony) which could generate traffic. All these factors in turn could affect residents' daily activities in that specific street, besides the population intensity of the neighbourhood.
- Higher education, is one means available for most Sudanese families to improve their socio-economic situation in the long term.
- The data revealed that the majority of graduates are living in third class areas, which signifies the importance of time as a factor in improving one's life through education.

- Despite this, the process of socio-economic change, is noticeably and comparatively fast for graduates, compared to other educational groups, with the exception of the few lucky ones. An example of this, is the rapid transition of people from rural areas to urban centres, and from third class areas to the upper classes, among the same groups.
- The latter transition is coupled with a better spatial quality, the former with a worse one. In both cases, playing-peers, and a playing behaviour pattern could be replaced and changed. Because perception and cognitive behaviour should be adapted to match the new physical environment, thus families have to adjust themselves to the new situation behaviourally. However the formal socio-cultural behaviour will not change, but their spatial context could be shifted according to the situation.
- In the Sudanese culture, if no radical environmental changes are taking place, ultimately no socio-cultural changes in the core of culture are anticipated. On the contrary socio-cultural patterns (core) are resisting to changes.
- In general, the majority of respondents are living in their own houses. This means that fewer houses have been left for tenancy purpose. Thus more new housing schemes are required.
- Although the majority of houses are tenured, the data shows that the majority of tenants are concentrated in third class areas, rather than in upper class areas, due to bad economic situation.

- The recreation pursuit, its function and understanding of its benefits, can improve by means of education.
- The type of occupation has an impact on the recreation pursuit, time wise, as well as on the type of accommodation.
- Houses in most Sudanese cities do not allow any type of contacts between private and public parts, due to the two-metre high solid walls, but with a few exceptions in first class areas. However, some people do use the main entrance occasionally to make such contacts.
- Since, the Sudanese society is a defensive and security conscious society, especially towards females; it has created many barriers and security measures to guarantee this goal.
- Generally, extended families are diminishing in Greater Khartoum, and are being replaced by nuclear families, especially in first class areas, due to economic and spatial independence. Also, all bachelors live in third class areas, and none in first and second class areas.
- The provision of transparent fences in a few houses contradicts the Islamic notion of privacy and sex segregation.
- The spatial deficiency of men's yard has compelled some families in third class areas into fencing part of the street and amalgamate it with their houses, so as to be able to fulfil some of their daily activities, which are of a spatial shifting nature.
- The absolute majority of respondents in all classes prefer to

see accepted social behaviour, which conforms with their culture.

- Respondents are divided on whether the residential environment affects their social and doing behaviour or not. Residents in first and third class areas think that the residential environment affects their ceremonial and doing behaviour, and those in second class areas do not. The previous data and the actual reality of the situation seems to support the former opinion.
- The majority of residents in the three classes, do have some knowledge about open spaces and public parks, either within the vicinity of their neighbourhood, within their own town or in another town. Despite this, the majority of them do not use or visit such spaces. This could be for the following reasons:
 - (a) The spaces within the neighbourhoods are not integrated with the neighbourhood context (no man's land). Thus, not so intimate to residents.
 - (b) Public parks are not attractive socially, in other words not compatible with cultural needs.
- There is a clear cut difference between the different classes occupationally, in Greater Khartoum's society, as manifested in the following class-occupation categorisations:
 1. Senior employees and private businessmen are living in first class areas, with other occupations'

minorities, but no workers.

2. The bulk of residents in second class areas are junior employees and men with small businesses, and other occupational minorities from both upper and lower occupations.

3. The majority of residents in third class areas, are workers:- then in second place, men with small businesses, but no private businessmen.

- For socio-economic problems, the above mentioned categorisations are not applicable in a few cases. Namely, educated people from poor backgrounds, who are obliged to live among the lower classes, although their status could allow them to live in better conditions. That is mainly because of the great responsibilities and sacrifices they must take towards their poor families, and not a matter of belief in equality in Islam.

- The breaking down of classes into occupational groups, has shown, that the main occupations of grass-roots of the Sudanese society are:

1. Junior employees;

2. Self-employed small business owners and workers.

Consequently, what the society needs, is low-cost housing which must satisfy their socio-cultural, climatical, psychological and functional needs.

8.5. Conclusions

1. To ensure lively streets some measures could be introduced which could encourage more activities in a street, such as: reducing car movement, (traffic control), by means of pedestrianisation, amendment of the physical pattern of the street, (narrow lanes and plantation), etc.
2. The classification of the Sudanese residences into classes, (neighbourhoods) has motivated people to seek better accommodation in spatial, physical and services terms. This process has made the Sudanese society more dynamic residentially, especially among graduates. In most cases, people prefer to put more emphasis on improving the extended family's old house, rather than moving to upper class areas. This occurs mainly for the sake of keeping the existing homogeneity, except in densely populated houses.
3. The process of people moving from rural areas to urban centres, coupled with and motivated by the concentration of all facilities in urban centres, has resulted in confusingly crowded centres. Thus, shortages in basic services and vital facilities will be unsolvable problems, economically, spatially and environmentally, unless complete and comprehensive new settlements in rural areas are initiated, to attract most people in urban centres. Here, they could be provided with proper jobs, decent houses and a better future for their children.
4. The process of people moving from rural areas to urban centres, or from third class to upper class areas, is

necessarily coupled with very subtle changes in groups and an individual's socio-spatial behaviour, which obviously does not affect the core of the culture.

5. The continuous flow of people from rural areas to urban centres, together with the limited tenancy accommodation in these centres, and the economic structure of the country as a whole, has encouraged the horizontal expansion of the cities, especially in the form of squatter settlements.
6. It seems that the main concept behind which entire Sudanese house and settlements are built, is the security and defence concept of the entire society, such as living in a close knit-group, the two-metre high wall surrounding a house the internal physical sequences of a house from the main entrance to the inner women's quarters and the narrow lanes.
7. In some cases, where there is an urgent need and some residents turn as a last resort to, perhaps, fencing part of the adjacent street to accommodate their recreation, entertaining, sleeping and playing activities. Thus, we could categorise such activities as having a spatial-shifting nature.
8. Regional background and length of urban residence does have an impact on the perception of the urban milieu, both socially and physically.¹⁸
9. The data has revealed that a built environment have an

¹⁸ see Chapter 11

impact on social (segregation, ceremonies performance), and doing (cleaning, washing) behaviour. Both are formal activities and need space. if there is no provision of space, residents will manage to accommodate them elsewhere in one way or another. So, although they are vulnerable to the built environment, they will continue to exist despite it, because they form the core of culture. Without them, residents will suffer severe social and psychological consequences. The built environment, have no impact on religious, psychological (contact, isolation) or play behaviour, for the following reasons:

a. Although Islam is the essence of the Muslim culture, (*core*), some of its rituals need physical and spatial configurations for group worship, i.e. Mosques. For individual rituals there is no need for space, since these rituals are very simple to carry out. For instance, if somebody is travelling by train, plane, or any other means of transportation, or if he is ill, he is permitted to simplify the ritual; delay or cancel it until another time. However, in residential areas, people are advised to carry out some of the ritual in groups, (preferable). This will in turn require spatial provision, (multi-purpose space).

b. Playing and psychological behaviour are informal activities and could be transferred from one place to another. Sometimes, it could be compensated for by other activities, such as working,

socialising and enjoying recreation.

10. Spatial standards should be provided and allocated for each type of family, (nuclear and extended). Accordingly, the existing policy, (equal plots to all), should be abolished.
11. The type of family, in relationship to the spatial configuration available for that specific family, has an impact on the family's recreational pattern.
12. There is a link between the class of the neighbourhood and the type of family living in that specific class.
13. Extended family residence should be encouraged, for financial, spatial and social reasons.
14. The fact that respondents are classified as living in a sort of occupation-class residence, is a dangerous sign. The society has been divided along income and economic grounds. This was unknown in the near past, and is basically against Islamic teachings, that all people are equal like the comb's teeth, regardless of race and income, (equality). Accordingly, they lived together in the past without any classification, or discrimination whether in economic, social or racial grounds.
15. Most of the Sudanese, according to their financial and social ability are obliged to support some members of their families who need some kind of support both socially and financially. The consequences of this socio-economic obligation is that there is still a very strong link between

family members (spatial). Nevertheless the preliminary data revealed that the extended family is divided and each nuclear family is living on its own.

16. Low-cost housing, that caters for socio-cultural, climatical, psychological and functional needs, is the most important for the bulk of Sudanese society grass-roots.

17. From what has been mentioned above, we can conclude that socio-economic factors do influence the type of accommodation one acquires and thus, one's future environmental expectations. On one hand the absolute majority of all respondents, have rejected the idea of having new residential developments stuck to the existing ones, with varying amendments. On the other, the planning patterns of the different neighbourhoods have striking differences. Thus it could be concluded that the Sudanese people have managed to adapt the built environment to match their daily lives, but with it easy going in some areas, and severe difficulties in others.

18. A combined solution between the traditional and modern technology, could solve the question of the built environment in the Sudan, by maintaining people's traditional social life, and borrowing new discoveries from modern technology. Both will enhance and promote the best old/new life and comfort,

19. The physical planning is not the only cause of dissatisfaction with the built environment, but administrative planning problems related to the built environment could be

as fatal as the planning problems, from the view of satisfaction and dissatisfaction, i.e. the case of Tuti as a temporary residence.

20. The fact that residents in each class do have different sets of priorities of amendments and for different reasons, under the same culture, proved that socio-economic factors do have an impact on residents' playing behaviour (children play and ceremonial), future expectations and priorities and vice versa.

21. The main priority for the Sudanese is the spatial configuration of the house and the city, rather than the physical form of both, which could be interpreted that they are satisfied to some extent with the horizontality of the city.

22. The class of the neighbourhood determines the types and sets of amendments required by residents' in that specific class.

The concluding results of the data has strongly resolved sub-problem 3, see also Chapter 5. Thus, the main problem, in a sense, is that different socio-economic factors (education, occupation, accommodation, class and family type), within the same culture, will influence the type of daily life one should lead. Because within any culture, people from different classes living in different built environments, will tend to have tiny differences in daily behaviour, (informal behaviour), but not formal behaviour, which forms the core of the culture and is shared between all people, regardless of socio-economic factors. At the same time, the conclusions have strongly supported research issue (3). Thus the data presented in this chapter has strongly supported the

central research issue stated in chapter (4).

CHAPTER 9

THE CONTRADICTIONS OF THE EXISTING SOCIO-CULTURAL

BEHAVIOUR TO THE NORMS

In any society there is a level of conformity with the socio-cultural behaviour. There is a need for people to implement some aspects of societies laws, and reject or ignore others. This depends on the people's experience, world view, degree of interactions with other cultures, economic situation and the power of the law, on the one hand, and the importance of the cultural institutions, whether it is formal, informal or technical, on the other. The Sudanese society is not an exception to this. This chapter will deal entirely with the contradictions of the Sudanese day to day social life, when compared with their laws, behaviour code of practice, religion and culture, and the implication of this on the built environment.

The Main Problem

People from different cultures, not only speak different languages, but in fact acquire different built environments to accommodate their diversified needs and socio-cultural behaviour. The Sudanese people are not an exception to this, so does any attempt to change the indigenous Sudanese built environments, consciously or unconsciously, ultimately result in a different behaviour which might have serious social and psychological implications?

Sub-Problem (4)

Are there any contradictions between the actual built-environments, (settings) – and consequent play and socio-culturally behaviour and the cultural-driven behaviour which people have to perform culturally? And what are the implications of both on the built environment?

Research Issue (4):

Due to cultural transfusions between different cultures, are there any contradictions between the actual socio-cultural behaviour facilitated by the existing built environment and the required socio-cultural behaviour by the Sudanese society?

9.1. Introduction

Culturally concepts do not necessarily identify what exists in the objective world; cultural systems, in one sense, create the world. Reality itself is culturally defined and cultural constructs partitions in this reality into numerous categories. Cultural categories are this conceptual categories.¹

The most important question in cross-cultural urban research however, is most explicitly stated by Ginsburg:²

"The Controversial Issue, one that intrigues geographer, sociologist and historian alike, turns to a considerable degree on the relationship between value systems and social organisation, on the one hand, and the development of city systems and various types of urban morphological patterns on the other ... what appears to offer great promise by far for further study is the impact of colonially derived administration and transportation networks on the landscape and the consequence of really differentiated economic development policies on urban structure, pattern and hierarchy ... studies ... suggest major differences between Indian cities and models of spatial arrangements hypothesised for western cities. The nature, causes and longevity of these differences provide an admirable field for both theoretical and applied research. One can speculate that technology, levels of living, capital available for urban improvement, caste and ethnolinguistic and religious diversity, and other cultural concomitants are involved, but to what extent and for how long?....

¹Gary Witherspoon, "Navajo Categories of Objects at Rest", *American Anthropologist*, 73,1,1971, p.110

²Ginsburg, N. (1973) *From Colonialism to National Development*

Clearly, here is support for raising once again the most important question in cross-cultural urban research. To what extent are basic differences in culture, even given the spread of 'modern western' technology and values, likely to give rise to different urbanisation processes, and the creation of cities as artifacts that differ from culture to culture? What kinds of cities can be expected to evolve in different societies as these societies make their decisions to select, adopt, and modify those elements that characterise western city-building functions and structure?"³

These and other factors suggest that the study of colonial urban development has considerable theoretical significance.

As the colonial urban development study has shown, the colonial culture established its own environment, an environment which goes far deeper than status and street names. It was one which reflected the values, not of the metropolitan but of the colonial society, values which modernisation and democratic control in the metropolitan society made increasingly irrelevant. Hutchin⁴, for example, suggests that members of that society who went to India from the late nineteenth century did so partially in order to obtain those benefits which economic, political and social change at home made increasingly difficult to find; domestic service, generous space standards, freedom from increasing industrial and environmental stresses, recreation and the life of a rapidly vanishing age. Whilst this study has concentrated on the built environment of a past colonial culture and indigenous one, it is clear that such a culture encompassed all aspects of life; the city, as Hutchin⁵ has patently shown, was its most representative artefact. The task for the inheritors of the colonial city is one of investigating it with a new set of social,

³Ginsburg, 1965, pp.311, 315, 319

⁴Hutchin, (1968)

⁵Ibid

cultural and political properties and to giving it a new symbolic meaning representative of the society of which it is now a part.

9.2. Questionnaire

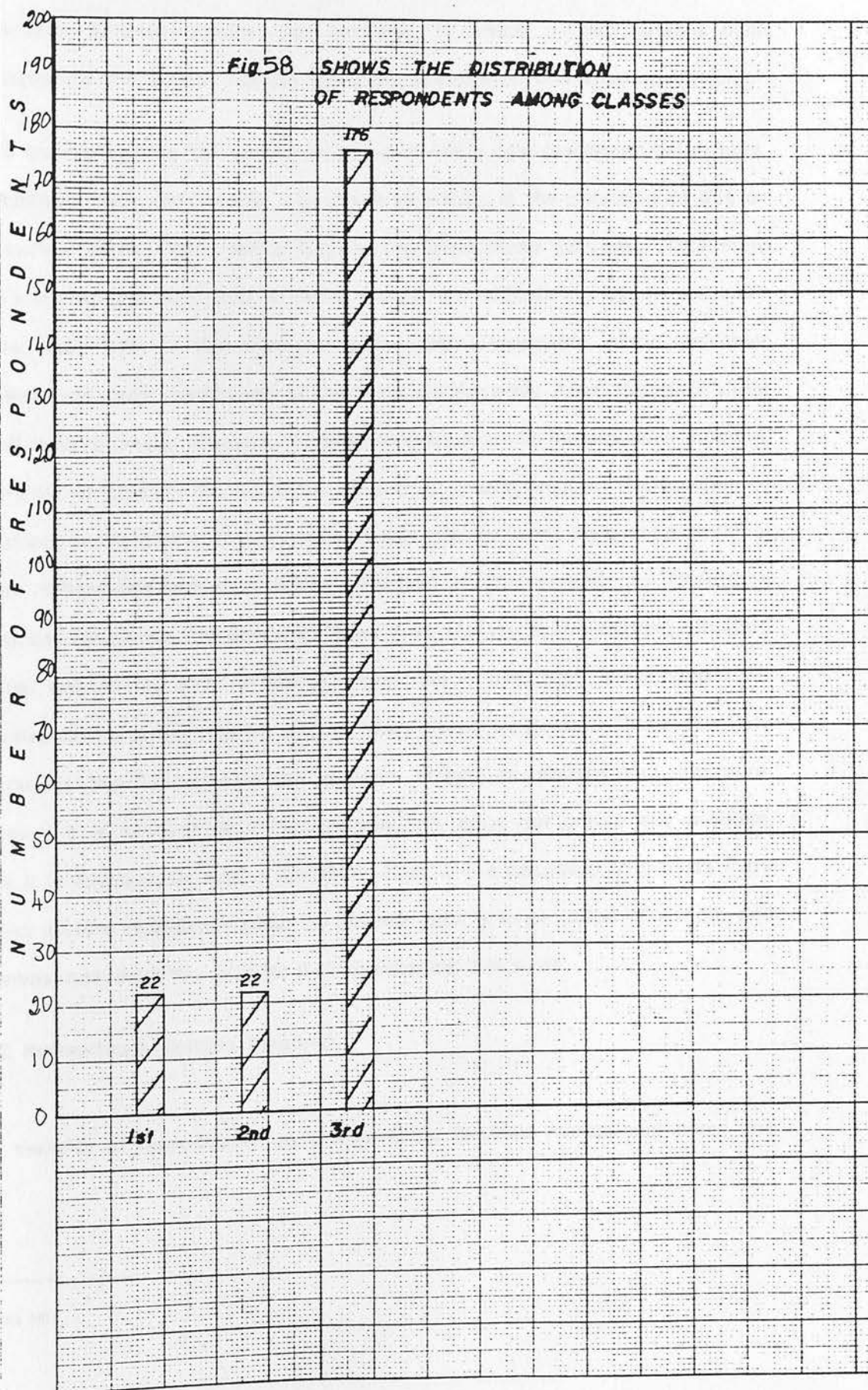
9.2.1. The Notion of Class

The current study shows that 80% of respondents are living in third class areas, the rest distributed equally between the first and second classes.⁶ This system of classification has come into effect since 1902, when Lord Kitchener commissioned the design of a new capital city for the Sudan, as has been mentioned before. Before that such divisions were unknown to the Sudanese.⁷ This fact has been manifested in Umdorman and some Sudanese small towns and villages. After the implementation of the classification system, Umdorman's ancient neighbourhoods have been considered as third class areas, as they have not got a regular grid pattern, built out of traditional materials, mud, and no adequate services, such as a main sewerage system, wide streets etc. The plot sizes in some areas are larger than any other standard considered by the local authorities. The same system has been implemented in Tuti. This classification system is clearly a contradiction to the Islamic conceptual system of equality.⁸ That all people are equal in all aspects of life, i.e., in residential areas with no classification based on income, occupation, education or race. The rich live near the poor, the ruler near the ruled, the minister near the worker, etc. This situation existed in the past and still persists in some towns and villages.

⁶Fig: (58)

⁷Chapter 2

⁸Chapter 3



This new situation has created a spatial, physical, political and technological competition between people, the outcome of which is the variable built environments manifested in Sudan generally and Greater Khartoum specifically.

Space standard policy has been introduced in many new residential extensions, especially in third class areas. The result of which, is the provision of one or two narrow yards, which could not accommodate many activities. Ultimately such activities will be shifted to public places, (streets), as has been mentioned before, especially in the women's case, who presumably carry out their activities and keep themselves in confined places, away from strangers.⁹ This act of women being exposed in some neighbourhoods outside their domain, apparently contradicts the Sudanese cultural norm and religion. The function of the street in the contemporary world is basically different from the traditional alleys. Where the former is entirely devoted to the car and the latter to a social and functional (climate) use. what is happening in the existing situation is that, due to the lack of spaces within the house, both sexes shift their activities to the public domain, as has been discussed before. This completely contradicts the function of the modern street, its pattern and structure. However, if it happens in traditional alleys, it does not create any problem, since it is founded for such a function. Thus it is a necessity to provide extra spaces around residential areas, to absorb such a huge influx of people and activities, and leave the road for its technological functions.

9.2.2. Recreational Facilities Required

The majority of respondents do require close families' recreational areas and

⁹Plates (6)

parks.¹⁰ The percentage of females are greater than males in this matter. This could be interpreted as women implementing the segregation notion willingly and without the intervention of men. However, according to the teachings of Islam, females should be segregated from males in such public areas.¹¹

What we can draw out of the data is that women have some presence in public places, however small it is. One must say that in most cases they were accompanied by a male member of the family. The point is that even so, the majority have to stay in women's areas only, and should not mix with men. It is said that the Sudanese are socially-oriented people, but this should not be taken as an excuse to break Islamic rules. The reality of Sudanese life today, plus the concrete fact of the data, revealed that some Sudanese women do mix with strangers in public places, which in itself, is a clear breach of the Islamic law of sex segregation, mainly in public places. This in turn resolves the sub-problem, mentioned in the beginning of this chapter.

Table (38): Shows the relation between sexes and recreational facilities required

Sex	Recreational areas for each age-group		Close recreational areas		Families only parks		Others, (clubs, libraries and nurseries)	
Male	(62)	32.1%	(119)	61.7%	(117)	60.6%	(63)	32.6%
Female	(7)	25.9%	(19)	70.4%	(21)	77.8%	(8)	29.6%

Although the frequencies of visits will be dealt with in Chapter 12, here it will be mentioned briefly to investigate the contradiction in recreational behaviour. It has been found that the percentage of women attending national and

¹⁰Table (45)

¹¹Chapter 3

religious ceremonies is more than that of men (mentioned before), because, there is an element of entertaining children. Also for the same reasons, the majority of them do visit public parks for fresh air.

Table (39): Shows sexes and and frequencies of visits

Sex	Weekly visits		Monthly visits		Annual visits		No visits
Males	(55)	28.5%	(140)	72.5%	(90)	46.6%	(4) 2.1%
Females	(7)	25.9%	(23)	85.2%	(15)	55.6%	(0) 0.0%

These changes in the women's roles are mainly attributable to the socio-economic and cultural diffusion factors. In the past women were confined to their houses, away from the sight of strangers. Although these roles are becoming more of a reality nowadays, still in some traditional communities, they do not appear so frequently in public places, especially for some age groups. However, this phenomenon contradicts the traditional Sudanese norms and religion. The impact of women's roles in the built environment is clearly manifested in the provision of separate behaviour settings, i.e., schools, hospitals' wards as well as separate queues for daily needs, as has been discussed before. The funny thing is that, although the society admits and endorses the new women's roles by accepting them and helping and encouraging females, in reality the society still maintains and enforces some basic technical props in the form of the above mentioned measures.¹²

¹²Hall, E.T. 1972; also see Chapters 5 and 6

Table (40): Shows the relation between reasons for visits and sex

Reasons for visits	Males		Females	
National ceremonies	(78)	40.4%	(14)	51.9%
Contact	(56)	29.0%	(9)	33.3%
Isolation	(8)	4.1%	(1)	3.7%
Rest	(53)	27.5%	(5)	18.5%
Have a meal	(28)	14.5%	(2)	7.4%
Fresh air	(75)	38.9%	(15)	55.6%
Nice scenery	(78)	40.4%	(10)	37.0%
Secured	(22)	11.4%	(3)	11.1%
Nicely arranged	(23)	11.9%	(3)	11.1%
Lovely	(58)	30.1%	(7)	25.9%
Lively	(42)	21.8%	(4)	14.8%
Close to house	(16)	8.3%	(1)	3.7%
Nice services	(17)	8.8%	(1)	3.7%
Visit relatives	(174)	90.2%	(24)	88.9%
Socialisation	(3)	1.6%	(1)	3.7%
Others	(39)	20.2%	(7)	25.9%

Again the recreational expectations of all the groups (towns, regions, length of residence)¹³, match the ones mentioned above except foreigners' group. However, the following findings have been drawn:

1. The majority of respondents do not support the idea of separate recreational areas for each age-group. Because the

¹³Tables (40); (41); (43a); (43b)

society is primarily divided along sex-groups more strongly than along age-groups.

2. Length of residence in Khartoum area, region, class have no influence in changing the general pattern of recreational exceptions.

Table (41): Shows the recreational facilities required and towns

Towns	For each Age - groups		Close areas		Family parks		Other "clubs"	
Khartoum	(22)	24.4%	(59)	65.6%	(50)	55.6%	(22)	24.4%
Umdorman	(26)	37.7%	(41)	59.4%	(47)	68.1%	(22)	31.9%
Khartoum North	(19)	35.2%	(34)	63.0%	(36)	66.7%	(24)	44.4%
Tuti	(2)	28.6%	(4)	57.1%	(5)	71.4%	(3)	42.9%

Table: (42) Shows class and recreational facilities required

Class	Parks for each Age-groups		Close recreation areas		Family parks		Others (Clubs)	
First class	(5)	22.7%	(14)	63.6%	(16)	72.7%	(6)	27.3%
Second class	(7)	31.8%	(9)	40.9%	(14)	63.6%	(4)	18.2%
Third Class	(57)	32.4%	(115)	65.3%	(108)	61.4%	(61)	34.7%

Table (43): Shows the relation between regional's groups and recreational facilities required

Regional groups	Recreation facilities for each age-group	Close recreational areas	Families only parks	Others (clubs, libraries and nurseries)
1	(36) 43.4%	(53) 63.8%	(56) 67.5%	(29) 34.9%
2	(23) 28.8%	(53) 66.3%	(54) 67.5%	(29) 36.3%
3	(9) 29.0%	(20) 64.5%	(18) 58.1%	(9) 29.0%
4	(1) 4.2%	(12) 50.0%	(9) 37.5%	(4) 16.7%

Table (43a): Shows the relation between length of residence
in an
urban area and recreational facilities required

Length of residence in Khartoum (in years)	Recreation area for each age-group	Close recreational areas	Families' only parks	Others (Clubs, libraries, nurseries, etc)
0 - 10	(15) 22.1%	(35) 51.5%	(43) 63.2%	(21) 30.9%
11 - 20	(20) 33.3%	(37) 61.7%	(40) 66.7%	(19) 31.7%
over 20	(33) 36.3%	(65) 71.4%	(54) 59.3%	(31) 34.1%

9.3. Contradictions with Cultural Institutions

According to Islamic constitution,¹⁴ the following laws should be implemented which affect the built environment in one way or another. There are some contradictions in their implementation environmentally, which could be due to various reasons, such as enculturation. These rules are:

1. That segregation between sexes is required outside the kin-group and in public places.¹⁵ Although some people observe these laws strictly, others do not, as has been manifested before, and which could be summarised by the following:

- a. The provision of no yards at all, or one yard only.

This situation resulted in one sex or both sexes moving to a semi-private environment. In the case of one yard, sometimes male visitors will be

¹⁴Chapter 3

¹⁵Ibid

entertained in that yard in the presence of female members, which is against the law.

- b. The congested urban mileue has created a need for a recreation pursuit, thus recreation facilities in the form of public parks. Despite the explicitly of the Islamic teachings, no provision for sex segregation in such areas has been considered. Accordingly, some females do go frequently to such facilities, but others do not. This state of acceptance and refusal, cold be solved either by providing separate parks for women or families, or separate areas within common public parks.
- c. Generally speaking, the concern for privacy is reflected in the physical form in several ways, such as the two-metre high solid walls,¹⁶ This is not applicable, especially in first class areas, as has been mentioned before. This is basically against Islamic rules, and should be corrected in terms of building by-laws. Also placement of entrance doors in front of other entrance doors, or near to windows, or opening of low level windows on the street, and the limitation of building heights throughout the city. The majority of residents in Khartoum area do not observe such privacy rules, because these rules

¹⁶Chapter 3

are not part of the building by-laws, or the environment. People do not bother about the rules of privacy within residential areas. Since the neighbourhoods are clannishly homogeneous, there is no need for privacy measures for women, because residents in the first place are from the same kinship. To encounter the vertical expansion of cities, and to reduce the harm of neighbours using roof terraces to their adjacent neighbours, high parapet walls have been introduced.

2. It seems that the unattended rules, which contradict with the existing behaviour and built environment are entirely religious rules, concerned mainly with the segregation between sexes and privacy of women. However, the environmental social need could be accommodated within the surrounding built environments, as has been shown before. Thus, there are no striking contradictions between them and the existing external built environments as such.

9.4. Summary

- The introduction of the residential classification system in 1902, is the corner-stone that shapes the existing built environment in Greater Khartoum. However one of the main teachings of Islam is equality between people in residential, as well as in other aspects of life, which has shaped the ancient and some modern Islamic settlements.

- The function of the traditional alleys is socio-climatic although those of the modern street is technical, (for cars). What happens nowadays is, both are used wrongly. The alley is used for cars, despite its narrowness, which has resulted in a contradiction between the traditional function and the imposed function, (car movement). The comparatively wider modern street is usually being used for social activities, as has been seen before. This contradicts its main function, and in many cases, consequently, there will be a complete traffic halt in some parts of a town, where the street has been used wrongly.
- Women do visit public parks occasionally for national and religious ceremonies, mainly for the sake of entertaining children, since they are responsible for that. This act of women going alone to public areas, contradicts Islamic teachings.
- On one hand the Sudanese society accepts the new social and environmental roles of females enforced by the reality of the daily life of the twentieth century. On the other hand it applies some constraints and measures against their actual contribution in the public environment.
- The Sudanese society has managed to perform its important occasion ceremonies in the public part of the environment by extending its spatial domain to public areas, (street). Although this action could solve its spatial problem it has been proved that it is not without social, religious, economic cost and traffic congestion consequences.

- The majority of respondents have required close and family-only parks.
- Sex segregation and women's privacy are not well maintained by the provision of one yard or two narrow ones in some areas. As well as in recreational areas in the urban areas recently, due to urban congestion and working environment.
- Privacy measures such as placement of entrances in relationship to neighbours' entrances, opening of windows on the streets the limitation of height throughout the city and height of parapet walls in case of roof terrace are not well observed. This is mainly due to residents' perception of clannishly homogeneous neighbourhoods , which is not the case in some neighbourhoods.

9.5. Conclusions

1. Since cultural norms are shared between all northern Sudanese, in terms of social, playing and recreational behaviour, it is vitally important to provide all residents with minimum spatial needs. To enable them to conform with their culture and to implement the Islamic equality both socially and physically.
2. The existing classification system in residential areas in Greater Khartoum, contradicts conceptually the Muslim notion of equality.
3. The conflict between the current use of an existing street, on one hand and its main function on the other, should be reconsidered by introducing new physical control measures,

in order to lessen the state of contradiction between its use and function.

4. Since families usually visit public parks for the sake of entertainment , and since women have been advised not to mix with strangers in such parts, it is recommended that separate parks, or separate areas within public parks, should be provided for women and children, (families).

5. There is a contradiction between the society legalising and adopting women's new roles on one hand, and the implementation of some technical props and measures on the other, such as keeping women in an harem area, and if allowed to go to public areas, ensuring they are escorted by males. These measures and props were meant to protect women from strangers explicitly and to protect their chastity implicitly. The implication of this complicated cultural phenomenon on the built environments is two fold:
 - a. weak representation of females in sexually mixed public areas, or
 - b. the provision of private settings for women's activities, i.e. schools, clubs etc.

6. The act of women acquiring close and family only recreational areas proves that they intend to implement the segregation rule upon themselves by themselves, without the intervention of men, who dominate the society.

7. The provision of clannish, tribal or regional homogeneities,

will help to achieve both functionally sound, (climates and economic), and a religiously respected built environment, (neighbourhoods).

8. Some existing women's religious behaviour contradicts prescribed religious behaviour. To put it right, environmental consideration should be given. However, in existing situations, social behaviour such as play, (ceremonial), have been accommodated in one way or another. This will not happen without, social, psychological, economic, physical and practical costs. Thus, for these reasons, mutli-purpose spatial facilities within neighbourhoods, should be provided, to solve the religious problem and accommodate the social ones.

So, the sum of contradictions, which have arisen in this chapter are in terms of women's roles, and physical deficiencies. Both in the general pattern and in individual houses plus the outcome from Chapter (5) strongly resolves the current sub-problem, as well as supports research Issue (4). This in turn supports strongly the central assumption of the current study.

CHAPTER 10

REGIONAL BACKGROUND AND LENGTH OF RESIDENCE IN URBAN AREAS

The Main Problem

People from different cultures not only speak different languages, but in fact acquire different built environments to accommodate their diversified needs and socio-cultural behaviour. The Sudanese people are no exception to this. So, does any attempt to change the indigenous Sudanese built environments consciously or unconsciously ultimately result in a different socio-cultural behaviour which might have serious social and psychological implications?

Sub-Problem (5)

Have regional background and length of residence in an urban area, i.e., Greater Khartoum, under the same northern Sudanese culture, have an impact on the perception and cognition of that specific place and its neighbourhoods and their surroundings?

Research Issue (5)

How do people coming from different regional backgrounds, (under Northern Sudanese culture) and reside in the Khartoum area for variable lengths of times, perceive the use of public spaces and parks?

10.1. Introduction

Under conditions of rapid urbanisation, especially in the third world nations, the tearing down of existing communities for new development is inevitable. Hence issues attending the process of resettling the affected individuals are both of lay and professional concern. Much of the literature on resettlement

tends to be focused on two issues, namely (i) the economics of resettlement, including the economic hardship faced by the affected individuals and households as these are often from lower income groups, and (ii) the social and psychological aspects of the loss of established homes and communities due to settlement.

Curiously, one obvious aspect of the resettlement process remains under-investigated; that is, the resulting changes in house and neighbourhood forms and perception of the built environment. Often, it means changing from culturally inherited house forms built with indigenous material and indigenous architecture idioms to some form of standardised structure of modern building materials. Since this change is overlooked so, too, is the resultant change in culturally conditioned behaviour and expressions that are embedded in the house forms themselves. Consequently, a major aspect of behavioural adjustments of the affected individuals to the new environment is neglected.

Whether people actually move depends on constraints and another set of choices – in addition to choosing environments people also choose whether to move. This may depend partly on their culture or subculture and their attachment to a place or to people and also on age, personality, life style, lifecycle, socio-economic factors and other variables so that one would expect those who move to differ from those who do not. This is in fact the case.¹

It is clear from the literature on intra-urban migration that most moves are short.² They are related to environmental quality³ and the choice process involved is the main mechanism for improving congruence between preference

¹Carrington 1970

²See Chapter 2

³Clark 1971

and the perceived built environment.⁴ The process applies to all environmental decisions and, in addition to migration, people may change their values, expectations and preferences; change their evaluation of the existing environment, or alter the environments but, in all cases, the attempt is to improve the congruence with certain environmental images.

Real estate people manipulate images to match lifestyle aspirations of particular groups. One can similarly argue that manipulating images may be the best way of handling urban design problems for the aged, so that it might be possible both to meet the aspirations of the elderly and also indicate to the larger community improved status, thus helping solve the principle social problem of the elderly in the U.S.⁵ Similarly in designing new towns environmental preference should be a major variable considered and one important way of attracting middle class and high status groups to the new towns (always a problem) might be through the manipulation of the appropriate images and achievement of appropriate preferences at the neighbourhood scale.⁶ Here recreation offers an instructive analogue.⁷ The study of investment in resort land of where people want to live, as opposed to where they have to live, shows clearly the values and images at any particular time. These attractions vary with culture and overtime, but at any time it is instructive to study the climate, location, atmosphere and design elements of successful resorts.

Similarly, one can argue that the only way of dealing with over-rapid urbanisation in developing countries is to consider the function of imagery in

⁴More, E., 1972

⁵Rapoport 1973 (d)

⁶Rapoport 1972 (a)

⁷Rapoport 1977

preferences and to stress the positive nature of traditional settings.⁸ One needs to consider the characteristics of declining places which people leave as well as those of places they like (push and pull) so that unbalanced growth and changes of reversing such imbalance seem to hinge on an understanding of environmental preferences. Overall satisfaction with places is related to three major characteristics. The ability to identify with a home area, accessibility to desired places, people and services and a physical setting corresponding to an image of an ideal environment,⁹ all of which, in fact, are embodied in an image of a preferred lifestyle.

Consider "mobile homes". Social and physical environmental preferences can clearly be expressed, and mobile home dwellers, as a group, are self selected populations of people who tend to be neighbourly and sociable so that trailer parks resemble small urban villages. Safety, and the site as private enclave, are important so that in spite of their "mobility" such places resemble other areas of similar socio-economic groups. Extreme social homogeneity is also important so that appropriate behaviour, moral and social standards, cleanliness, and symbols such as lawns and suitable patio furniture are all accepted and used to maintain status. These are communities voluntarily created by choice and they attract some groups but not others of similar age and income.¹⁰

10.2. Questionnaire

⁸Rapoport 1973 (c)

⁹e.g. Buttimer 1972, pp.289 - 290

¹⁰Johnson, S., 1971

10.2.1. Regional Background and Length of Residence

The data revealed that the majority of respondents have been in Khartoum area for more than ten years.¹¹ This duration is enough to acculturate them to an urban community, differ in some aspects of life from their old ones . In this new life their previous demands, consumption, lifestyle, will change to a new set of needs. Thus the majority of respondents are from Khartoum, either by birth, acculturation or adaptation.

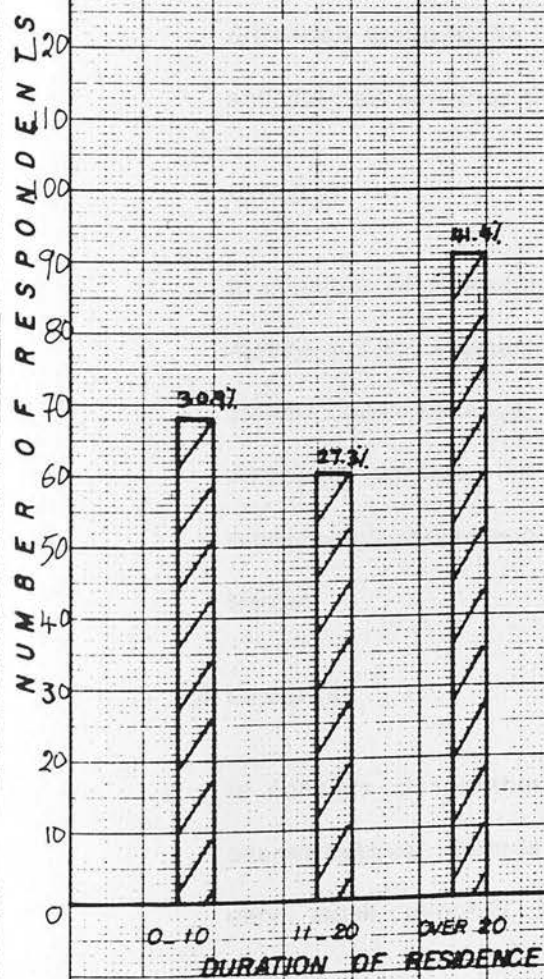
The study has to point out that this adaptation is in terms of few Western life styles and not in terms of the Sudanese indigenous culture, which is comparatively homogeneous in Northern Sudan, despite the minor variations, such as minor behaviour between the rich and the poor in cities, regarding spatial utilisation, and between urban and regional areas. However by and large Islam has unified them and people do intact to the Islam and their social culture. The Khartoum area has the largest population, (40%), of the total respondents, then the Northern region in second place, and Kordofan and foreigners in third place.

Before any further discussion it should be mentioned that, Darfur, Eastern and Southern regions, each have less than fifteen respondents, and according to the rule of thumb, the number of respondents should be a minimum of fifteen in any given social survey in order to have a satisfactory conclusion. Also some of these regions share some criteria, such as regional, geographical and tribal. So, for the above mentioned reasons, it has been decided to group different regions accordingly and as follows:

1. Group (1)

¹¹ Fig: (59)

Fig. 59. SHOWS LENGTH OF RESIDENCE



Consists of Greater Khartoum, (Khartoum region), it is the most urbanised region in the country population wise, it represents all the Sudanese people with varying densities.

2. Group (2)

Consists of mid-region, Northern and Eastern regions, all bordering Khartoum region. The group has more or less homogeneous tribes due to the immigrations that have taken place in the last hundred years. It is the second urbanised group in the country due to its proximity to Egypt and the Red Sea, thus the outer world.

3. Group (3)

It consists of Kordofan and Darfur regions, occupies the middle and the Western parts of the Sudan, to some degree tribally homogeneous and is dominated by nomads. Although Kordofan is proximate to Khartoum, but its topography, people and way of life are similar or closer to Darfur.

4. Group (4)

It consists of Southern region and foreigners, what is shared between them is that they have non-muslim culture, very small minority in Khartoum area, heterogeneous socially.

10.2.2. Environmental Perception

The data has revealed that the knowledge and cognition of open spaces has

nothing to do with the regional background. In other words, people from far regions or foreigners have better cognition of open spaces in Greater Khartoum than the original residents of Greater Khartoum itself.¹² Whether this knowledge has been translated into actual contribution in activities in these spaces will probably be answered in the following paragraphs.

Table (44): Shows the relation between regional groups and perception of open spaces

Regions' Groups	There are open space		No open spaces		Have no idea	
1	(55)	66.3%	(20)	24.1%	(8)	9.6%
2	(60)	75.0%	(14)	17.5%	(6)	7.5%
3	(24)	77.4%	(4)	12.9%	(3)	9.7%
4	(17)	70.8%	(2)	8.4%	(5)	20.8

Although the data shows that Khartoum region residents are less knowledgeable about open spaces, they do recreate in public parks more than other groups do, this could be for proximity reasons. Also the same phenomenon is applicable to Groups (2) and (3). This means that either resident's cognition of public parks is not necessarily linked to actual visits to these parks and vice versa, or, some may recreate in socialisation with friends and relatives within the neighbourhoods. The notion of socialisation could be supported by the fact that respondents recreate according to the number of their fellow region's men, or it is affected by the closeness of the region to Khartoum.¹³ The closer the region to Khartoum geographically, the more people originally belonged to that region recreate.

¹²Table (44)

¹³Tables (26) and (44)

Also, the data reveals that the duration of residence in the Khartoum area¹⁴ does not have a strong impact on residents' cognition of open spaces in the three categories (length of residence). Despite this, there are some variations between the three categories. Those who have duration of residence up to ten years do have relatively poor cognition of public spaces. However those who have lived in Greater Khartoum for the last twenty years do not have better cognition than those who have lived between 11 – 20 years, this could be for social or personal reasons especially among the last group. Otherwise, the schemata of urban spaces of the former group should be well manifested than the latter one, since schemata are constructed over time and related to the individuals experience in the city and hence to variables such as class, sub-culture, location, activity patterns and travel behaviour. It appears to be simultaneously a process of simplification and elaboration.¹⁵

The data from other respondents' groups has shown that social relationship within the neighbourhood could probably satisfy residents psychologically and socially.¹⁶

Table (45): Shows the relation between environmental satisfaction and parks perception

Knowledge of Parks	Satisfied	For Social	For Planning	For Location
There is park	(135) 85.4%	(78) 49.4%	(60) 38.0%	(99) 62.7%
No park	(33) 82.5%	(27) 67.5%	(16) 40.0%	(24) 60.0%
Have no idea	(17) 77.3%	(7) 31.8%	(10) 45.5%	(12) 54.5%

¹⁴Table (47)

¹⁵Wallace, 1965

¹⁶Table (45)

Table (46): Shows the relation between sex and the perception of public spaces

Sex	There is open space		No open space		Have no idea	
Males	(139)	72.0%	(34)	17.6%	(20)	10.4%
Females	(19)	70.4%	(6)	22.2%	(2)	7.4%

Table (47): Shows the relation between length of residence in Greater Khartoum and perception of open spaces

Residence in Greater Khartoum (in years)	There is an open space		No open spaces		Have no idea	
0 - 10	(46)	67.6%	(12)	17.6%	(10)	14.7%
11 - 20	(47)	78.3%	(7)	11.7%	(6)	10.0%
over 20	(64)	70.3%	(21)	23.1%	(6)	6.6%

10.3. Summary

- The majority of respondents have resided in the Khartoum area for more than 10 years, which by all measures is enough for acculturation.
- Residents' cognition of open spaces has nothing to do with their regional background. This means that, either their cognition of public spaces is not necessarily a concomitant of actual visits to these areas, or some residents may recreate in socialising with friends and relatives within a neighbourhood. Also the length of residence in the Khartoum area does not have strong impact on residents' cognition of public spaces in the same area, especially among groups (2)

and (3) (11 – 20 and over 20 years), compared with group (1), (0 – 10 years).

- Long duration of residence in Greater Khartoum has positive impact on annual visits for national and religious ceremonies, and vice versa.
- The proximity of a region to Greater Khartoum could imply typical perception of environmental problems and consequently typical solutions, as that of Greater Khartoum residents.
- Length of residence in the Khartoum area has typical results as proximity to the same area, in that peoples perception of environmental problems and their solutions are more or less typical. Thus there is a very strong link between them (length of residence and proximity).

10.4. Conclusions

1. The cognition of an open space is not necessarily a concomitant of actual visits to it. Also respondents who are considered comparatively new comers to an urban area (Khartoum), do have better cognition of its public spaces than its original residents. In such an urban mileue, residents who belong to a specific regionnaturally do have some social links between them. This means that neighbourhood homogeneity is preferable in the Sudanese society which could be utilised as a tool in solving environmental-spatial problems.

2. The cognition of public spaces in Greater Khartoum does

not depend on regional groupings or length of residence in the Khartoum area, but merely a personal conviction – based mainly on personality, education, personal knowledge and experience, etc.

3. A person's perception of a major environmental problem and its solution is a function of proximity between his old region and new urban region.
4. Long residence in an urban area is a function of adjacency of old and new regions, and both influence the perception of environmental problems and their realistic and practical solutions.

Although some of the data in this chapter does not show any noticeable variations between regional and length of residence groups, the majority does. It could be concluded that the sum of the current data and the conclusions from chapters 5, 8, 9, and 13 resolves sub-problem (5) and supports research issue (5). In a sense that there are tremendous variations in people's perceptions of urban public spaces and physical problems and anticipated practical solutions, based on differences of their regional backgrounds and length of residence. This finding strongly supports the central assumption on the study.

CHAPTER 11

SATISFACTION OR DISSATISFACTION WITH EXISTING ENVIRONMENT

Often environmental problems are considered to be "personal"; the source of the difficulty is thought to be an individual one, the troubled person or someone he or she interacts with. When a problem is defined in these terms it is often assumed that the individual must change if the problem is to be solved. It is believed that in many cases "personal" problems are, in fact, instances of inappropriate fit between persons and settings. A possible solution for such problems is for the people involved to search out different settings where the fit is better.¹ However, the search for a solution for such complicated environmental problems nowadays is entirely the responsibility of the designing team.

This chapter is intended to see whether residents in the Khartoum area are satisfied or dissatisfied with the built environment and what are the diagnosis in both cases.

The Main Problem

People from different cultures not only speak different languages but in fact acquire different built environments to accommodate their diversified needs and socio-cultural behaviour. The Sudanese people are not an exception to this. So, does any attempt to change the indigenous Sudanese built environments, consciously or unconsciously, ultimately result in a different socio-cultural behaviour which might have serious social and psychological problems?

¹Bechtel, 1977, pp. 38 - 47

Sub-Problem (6)

Although almost all the existing environments, (residential), in Khartoum area, have some basic short comings, are the majority of residents satisfied with their houses and neighbourhoods for social relation reasons and dissatisfied for planning (pattern and services) reasons?

Research Issue (6)

Although there is rarely an absolute satisfaction with the built environment worldwide, (based on personal experience), and the Khartoum area specifically, are most residents in the Khartoum area satisfied with their houses and neighbourhoods for social relation reasons and dissatisfied for planning (pattern and services) reasons?

11.1. Introduction

The word satisfaction is a complex one and could be traced in our every day life; i.e. job satisfaction, social satisfaction, marital satisfaction, environmental satisfaction, etc.

Maslow's need theory proposes a hierarchy of needs in which the lower order biological needs are at the bottom and the higher order needs are at the top.²

The needs are:

- (i) Self actualisation needs.
- (ii) Esteem needs.
- (iii) Social (affiliation) needs.
- (iv) Safety and security needs.

²Maslow's 1943

(v) Basic physiological needs.

According to Maslow, only after the lower order needs are satisfied are individuals in a position to seek the satisfaction of higher or esteem and self actualisation needs. An analogy might be drawn with someone shipwrecked on a desert island who first ensures that he has food and water and shelter. He or she will then examine the island for other humans in the hope that they are friendly and will fulfil social needs. Only then will the individual concentrate on higher-order needs of achievements, recognition and so on within a society.³ The theory has been applied within a job context to argue that the employee first seeks satisfaction of basic needs for security and pay, as well as social satisfactions, before going to seek satisfaction of higher-order needs for achievement and recognition. Similarly the theory could be applied in an environmental context, in a sense that residents first seek to guarantee a decent subsistence (as the case of Flata neighbourhood, in Chapter (7)), as a basic need, then gradually they move up the ladder step by step, social needs, esteem needs, self actualisation needs, until they reach the satisfaction with the built environment needs.

The issue of residents' satisfaction with their dwelling units and their neighbourhoods is one of growing interest in various arenas.⁴ In the public sector urban planners and elected officials are pressured to use increasingly scarce financial resources so as to maximise the well-being of their housing client population, whether it be through public construction or selective rehabilitation programs. Finally, all sectors have intrinsic interest in the

³Galster and Hesser, (1981);Hewrzberg, 1966, p.127

⁴See Fried and Gleicher, 1961; Lansing and Hendricks, 1967; Lansing and Marans, 1969; Lansing et al, 1970; Durand and Eckart, 1973; Speare, 1974; Rent, 1975; Onibokun, 1976; Morris et al, 1976.

attitudinal antecedents to the process of neighbourhood deterioration and residential abandonment.⁵ Clearly, more knowledge about the factors which are strongly related to residents' satisfaction (or dissatisfaction) with their dwellings and neighbourhoods would be invaluable in all these areas as noted by Craik and Zube.⁶

Given a set of felt needs and aspirations an individual evaluates his or her current housing situation with regard to both the dwelling unit and neighbourhood.⁷ The needs and aspirations perceived by a given individual are a complex of both individual characteristics (social class, life cycle stage, and so on) and cultural norms impinging upon the individual.⁸

Based on these factors, respondents were asked whether they are satisfied or dissatisfied with their existing environments and why.⁹ Eventually the reasons for satisfaction and dissatisfaction have been grouped on common and shared grounds, i.e., spatial, crowding, recreational, sanitational, car accessibility, etc., are considered planning reasons, relation with neighbours, family matters etc., are considered social reasons, and proximity to shopping and administrative services centres, and distance to relatives, friends, etc., are considered locational reasons.

These reasons or factors are to some degree identical to Galster and Hesser,¹⁰ two sets of objective factors which they say play a role in the process of residential satisfaction. One set is "contextual": the physical characteristics of

⁵ Galster, and Hesser, (1981)

⁶ Craik and Zube (1975 = 32)

⁷ See Wirth, 1947; Hud, 1975; Michelson, 1966, 1976

⁸ See Foote et al, 1960; Sanoff and Sawhney, 1971; Morris et al, 1976;

⁹ Appendix (4)

¹⁰ G. Galster and G. Hesser, *Environment and Behaviour*, November 1981

the surrounding neighbourhood. The second is "compositional": characteristics of the individual household, especially social class and stage in the life cycle.

11.2. Questionnaire

11.2.1. Satisfaction And Dissatisfaction With The Existing Environment

Generally residents are satisfied with their neighbourhoods, thus the cities, regardless of whether they are tenures or tenants, living in first, second or third class areas, living comfortably or miserably, etc. The data shows that Umdorman and Tuti residents are satisfied with their environments more than those in Khartoum and Khartoum North, because they are proud with the originality of their settlements and the role their ancestors played historically, socially and spatially in forming these settlements, besides the daily life factors. Although nowadays Khartoum is the official capital, and Khartoum North is the industrial capital, Umdorman is considered the national capital, since it amalgamated all the Sudanese people more than a hundred years ago.

Khartoum residents are satisfied for locational reasons and some for planning reasons since they comparatively have the best shopping, services, roads, governmental and commercial establishments¹¹. Residents in Umdorman, Khartoum North and Tuti, are satisfied with their environments for social and locational reasons. Thus one could argue that there are some similarities between the three of them, socio-economically. Although Khartoum North is a labourer's camp, but generally the income level and standard of living are to some extent the same, in terms of built environments. Regarding the locational satisfaction, it seems that most residents' interpretation of the location is in terms of their cognition of the surrounding social and physical environments,

¹¹Table (48)

not in terms of the distances to working places, commercial and administrative centres. Because all vital centres and services are located in Khartoum, and most of these neighbourhoods are in the peripheries of towns. Despite these facts, the majority of respondents have given the location as the main reason behind their environmental satisfaction. This is due to the reality that they have accustomed to their daily lives, to the transport they use, to the social mileues, good friends, neighbours or perhaps relatives etc. Accordingly they are happy locationally, intact to their life and do not want to change it and start a new one.

Table (48): Shows the different basis of environment satisfaction in relation to towns

Town	Satisfied	For Social	For Planning	For Location
Khartoum	(72) 80.0%	(38) 42.2%	(44) 48.9%	(49) 54.4%
Umdorman	(61) 88.4%	(36) 52.2%	(21) 30.4%	(48) 69.6%
Khartoum N.	(45) 83.3%	(31) 57.4%	(21) 38.9%	(33) 61.1%
Tuti	(7) 100.0%	(7) 100.0%	(0) 0.0%	(5) 71.4%

Fig: (60) shows that there is very strong, systematic, and significant relationship between the social factor as one reason for respondents' satisfaction with their environments and the town in which the neighbourhood is located. The percentage of those who are satisfied for social reasons is increasing with the sequence of towns in terms of population, class etc., (Khartoum, Umdorman, Khartoum North and Tuti).

Fig: (61), shows the same relationship, but with planning as the reason behind the satisfaction with the environment. However the result is a reverse of the

first one (Fig: (60), in terms of scores of towns. These two relations form the most important relations in Tables (48).

The relationship with other categories (class, family, occupation, accommodation, neighbourhood), has revealed the following findings:¹²

1. There are very strong, systematic, and significant relationships between residents' satisfaction with their neighbourhoods for social relation and planning pattern reasons and the class of the neighbourhood. ¹³ These form the most important relation in Table (49). The shape of Fig: (63) explains the fact that the class of the neighbourhood determines the degree of planning satisfaction of that specific neighbourhood.

Table (49): Shows environmental satisfaction by class

Class	Satisfied	For Social	For Planning	For Location
First	(21) 95.5%	(4) 18.2%	(19) 86.4%	(18) 81.8%
Second	(19) 86.4%	(13) 59.1%	(14) 63.6%	(17) 77.3%
Third	(145) 82.4%	(95) 54.0%	(53) 30.1%	(100) 56.8%

2. Bachelors are the only group that is not satisfied with the environment, yet the minority that is satisfied with it, did so

¹²Tables (49); (50); (51); (52); (53); (54); (55)

¹³Fig (62); Table (49)

for planning reasons only,¹⁴ although all of them do not live in upper classes where residents are satisfied with the planning which is understandable in terms of plot's size, services, etc. It seems that from the author's own experience bachelors are not satisfied with the neighbourhoods because they feel socially isolated from the community around them and since they have not got families, some people are socially very cautious about their living in the neighbourhood. Even Islam considers marriage as half of the faith. Thus, it could be argued that social satisfaction with the environment (neighbourhood), is strongly related to having a family or living with a family.¹⁵

3. Extended families are satisfied with their environments for social reasons, rather than planning ones, for the simple reason that they have got many household's members in different age-groups. Ultimately, each member of the household will have a kind of social relationship with his age-mates, this relationship will add to the family's social life, which in turn will enrich the social life of the family and strengthens its ties with the neighbouring families in the neighbourhood. This in turn will aggravate the existing situation spatially.¹⁶

4. Pensioners are more satisfied with the social environments¹⁷

¹⁴Table (50)

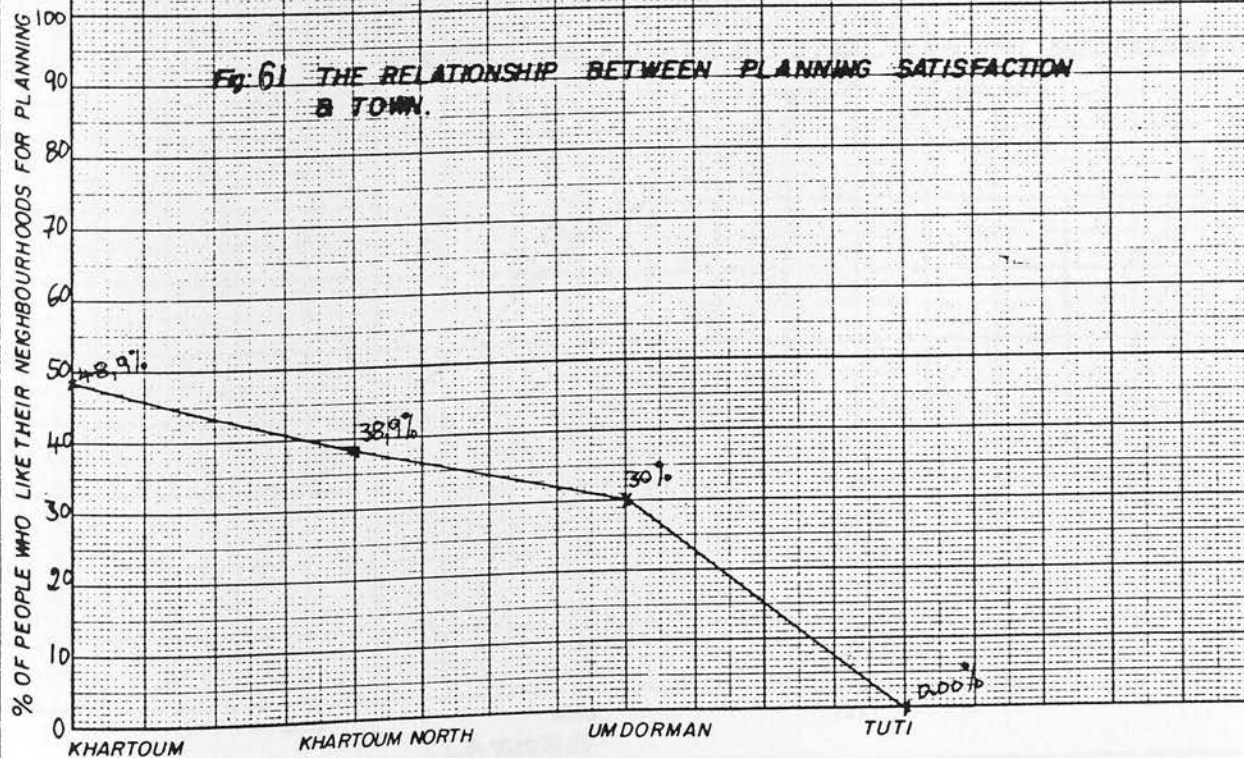
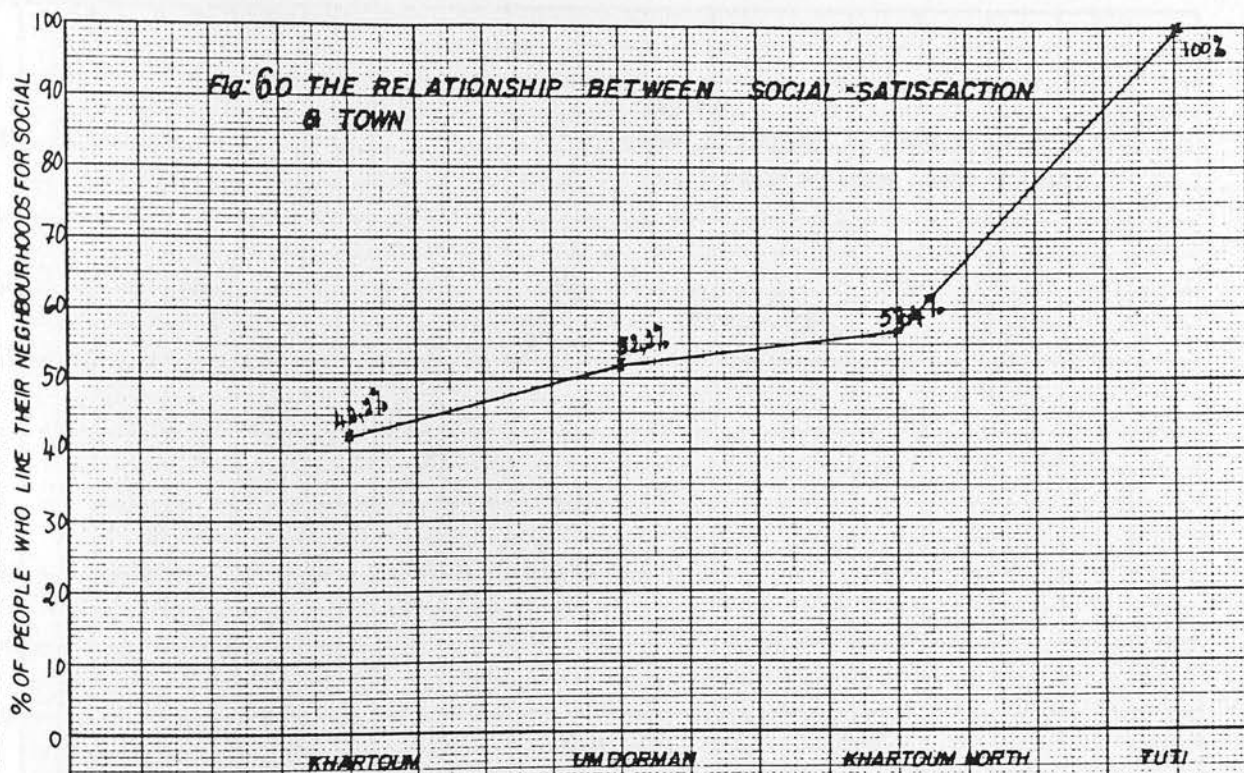
¹⁵Fig: (64)

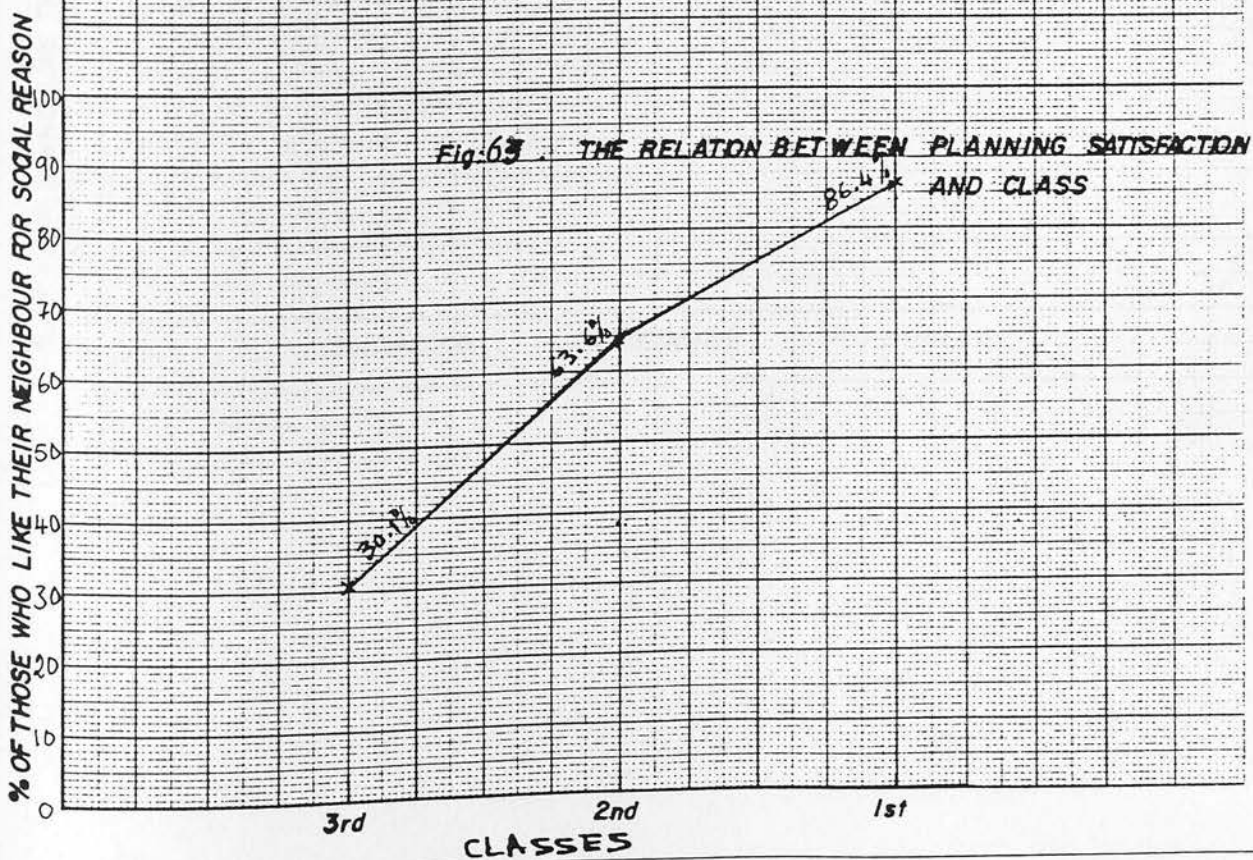
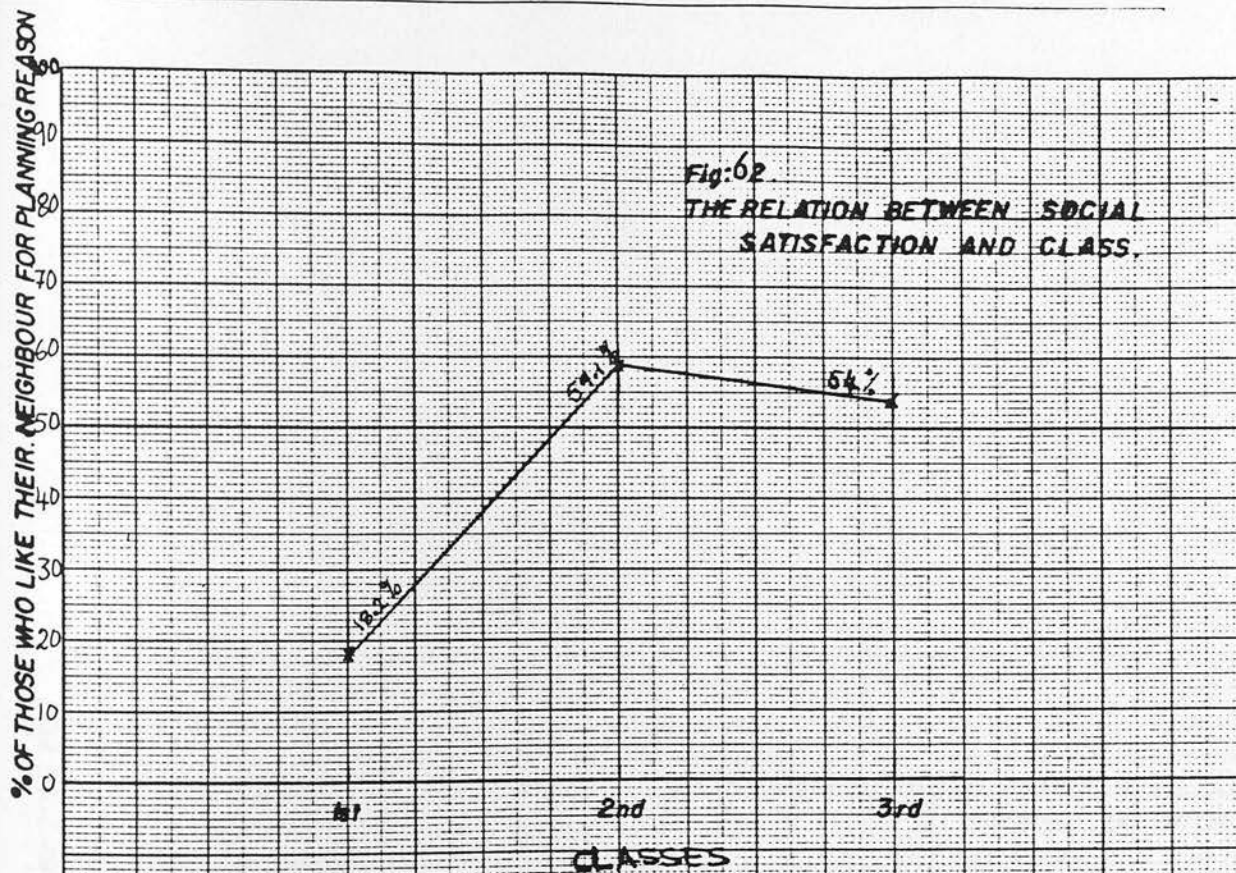
¹⁶Fig:(65)

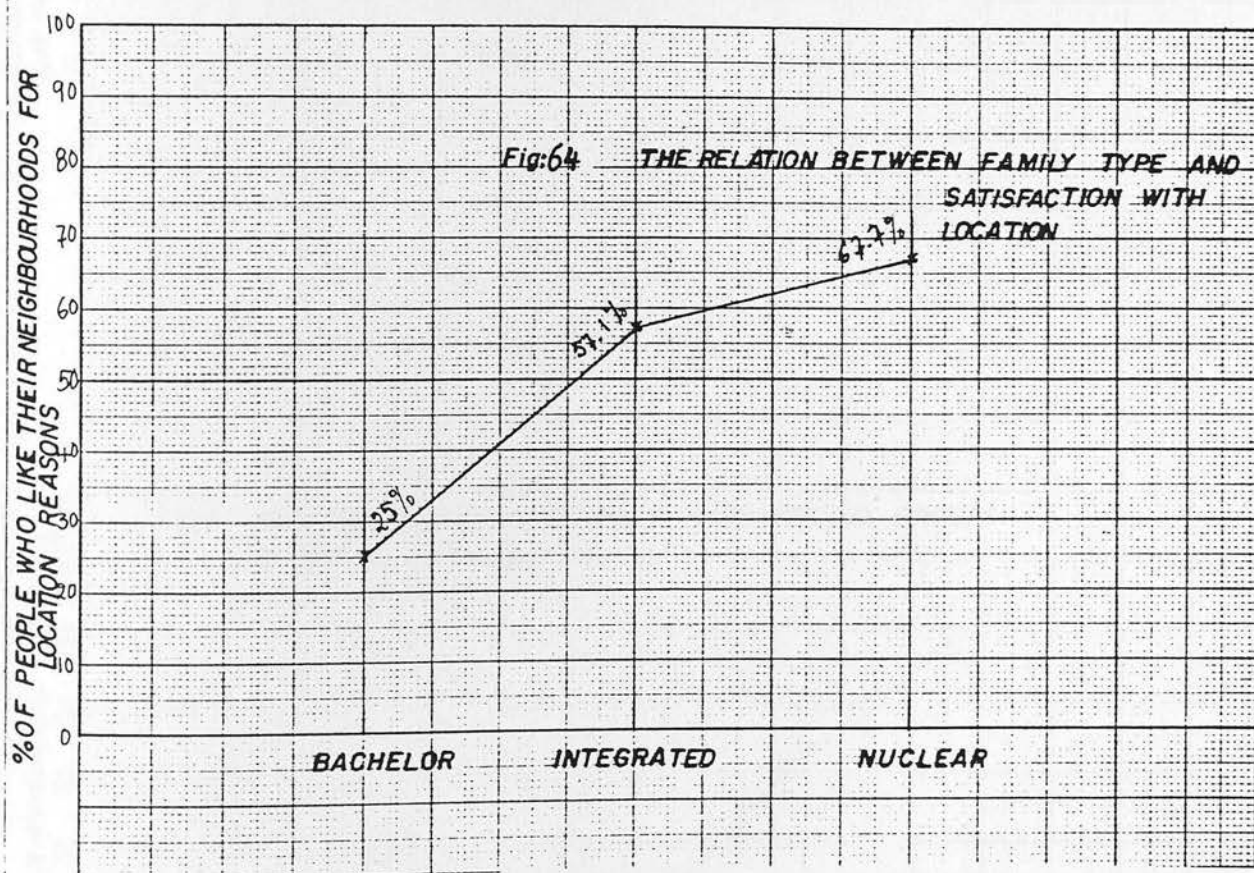
¹⁷Fig: (66); (67); Table (51)

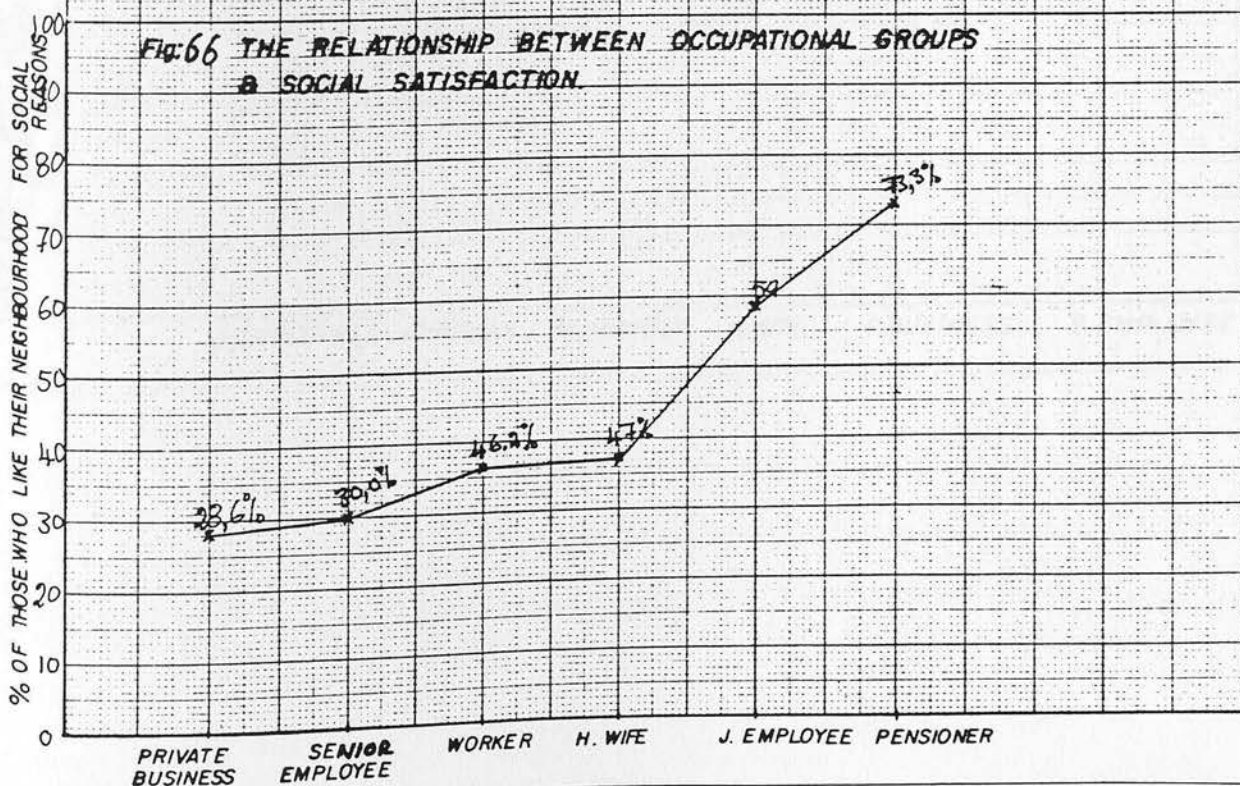
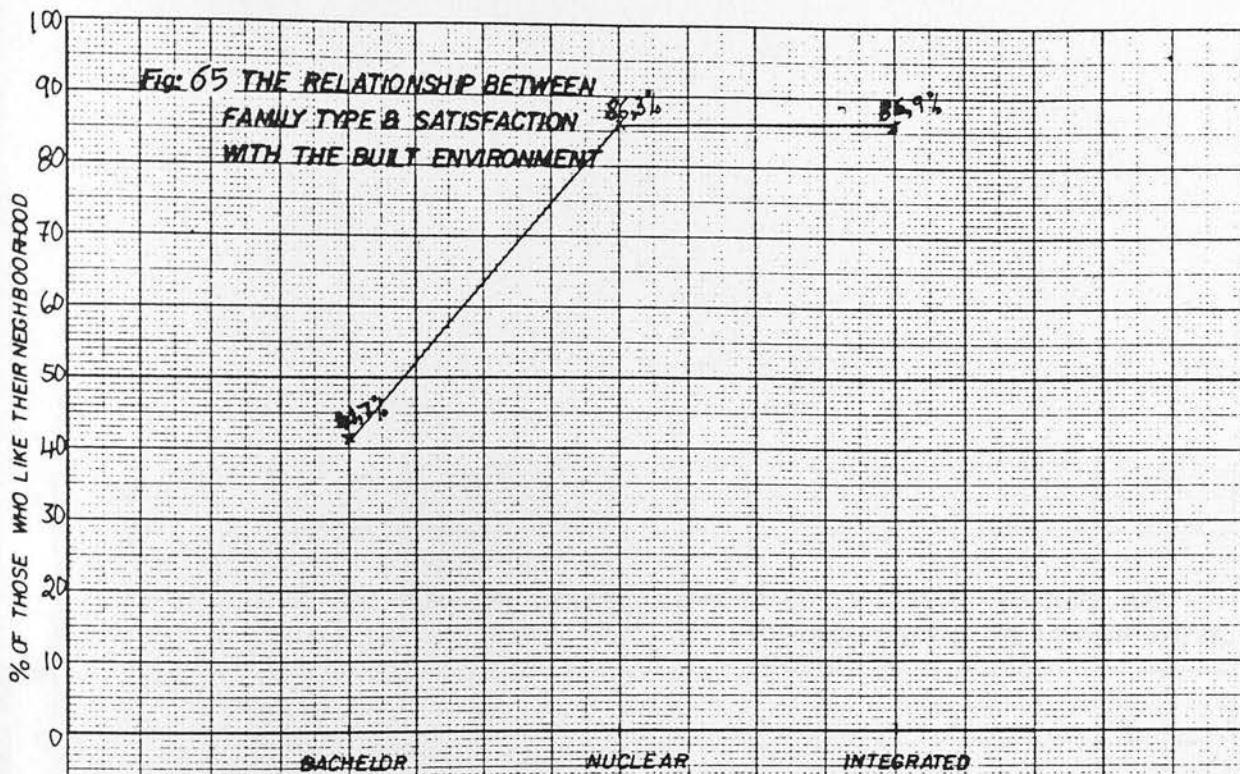
than the other occupational groups. For the following reasons:

- a. They are permanent residents of a neighbourhood around the clock. This situation has boosted their social relationship with other groups and their own.
- b. The Sudanese society is a society that values the elderly, by keeping them in an extended family household's responsibility, so as to be looked after and served by the rest of the extended family.
- c. Islamically, the last years of a person's life are very valuable and could be the most fruitful deeds wise. Based on this concept they should be devoted to good deeds and worship God, as renders for the after life.
- d. The biological fact that when a person becomes very old, his behaviour will change, has led the society to keep the elderly inside the house (separate quarters) or within the neighbourhoods, so as to maintain the respect of others.









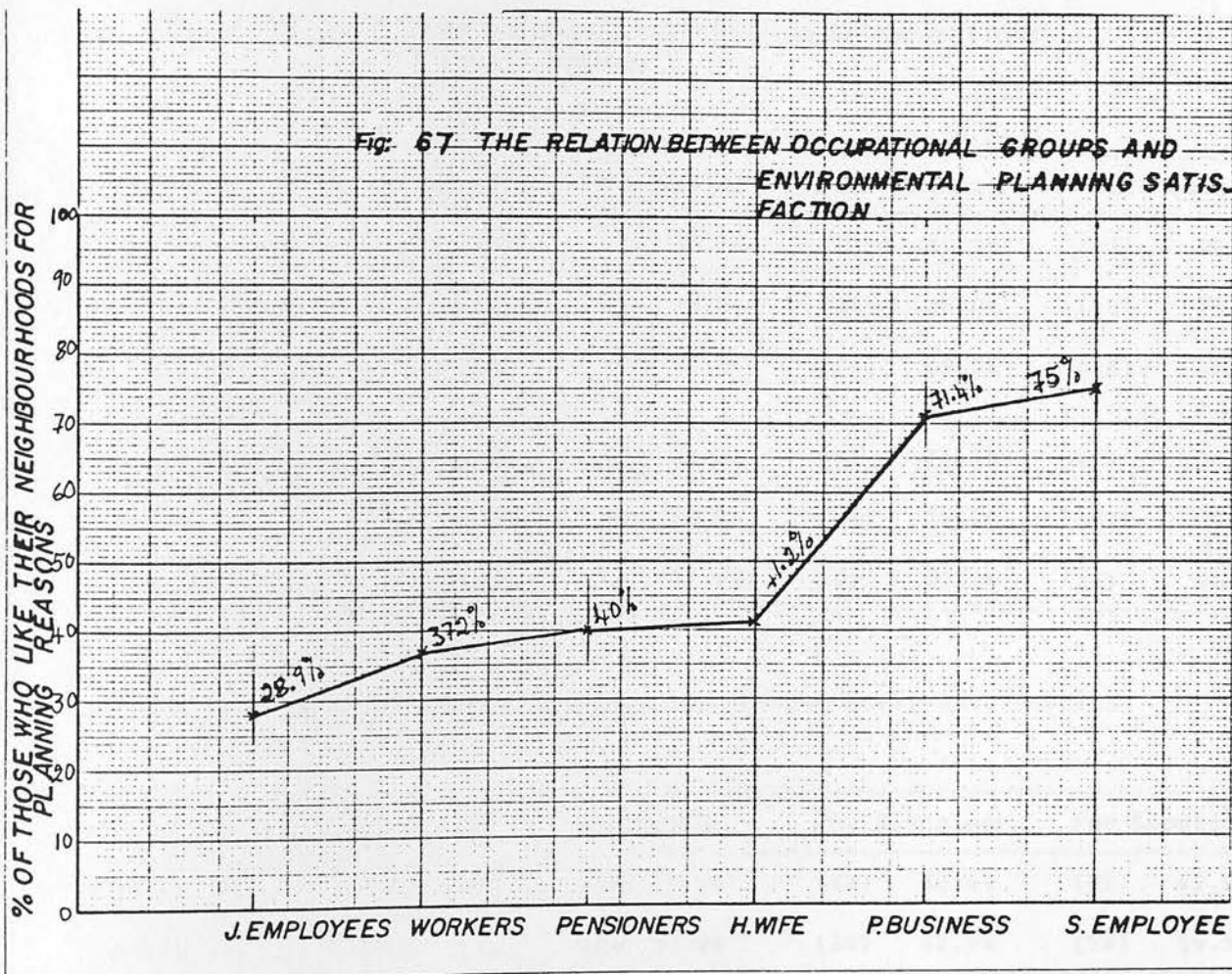


Table (50): Shows environmental satisfaction by family types

Family type	Satisfied	For Social	For Planning	For Location
Integrated	(73) 86.9%	(48) 57.1%	(28) 33.3%	(48) 57.1%
Nuclear	(107) 86.3%	(60) 48.4%	(51) 41.1%	(84) 67.7%
Bachelor	(5) 41.7%	(4) 33.3%	(7) 58.3%	(3) 25.0%

Table (51): Shows environmental satisfaction by occupational groups

Occupation	Satisfied	For Social	For Planning	For Location
Housewife	(16) 94.1%	(8) 47.1%	(7) 41.2%	(12) 70.6%
Senior employee	(18) 90.0%	(6) 30.0%	(15) 75.0%	(15) 75.0%
J. Employee and small business	(73) 88.0%	(49) 59.0%	(24) 28.9%	(56) 67.5%
Private business	(7) 100.0%	(2) 28.6%	(5) 71.4%	(7) 100.0%
Worker	(59) 75.6%	(36) 46.2%	(29) 37.2%	(39) 50.0%
Pensioner	(12) 80.0%	(11) 73.3%	(6) 40.0%	(6) 40.0%

Table (52): Shows accommodation groups and environmental satisfaction

Accommodation	Satisfied	For Social	For Planning	For Location
Tenures	(116) 89.9%	(78) 60.5%	(47) 36.4%	(81) 62.8%
Tenants	(69) 75.8%	(34) 37.4%	(39) 42.9%	(54) 59.5%

As has been mentioned all through this chapter the majority of respondents among all categories are satisfied with their neighbourhoods, and very few dissatisfied with them, and both for various reasons (social relation, location to

main centres and planning pattern).¹⁸ In this context it seems that the social reason is the most important for both environmental satisfaction and dissatisfaction in the Sudanese context. ¹⁹ In a sense that more than 50% of those who are satisfied, are satisfied for social reasons as well as about the same percentage of those who are dissatisfied. This means that the social relation reason is so important for the Sudanese people in the residential environment. Fewer people are satisfied with their environments for planning pattern reasons, however, the majority of those who are dissatisfied are for planning reasons too. This means that the majority of the existing planning patterns and housing policies in the Khartoum area are unsatisfactory for residents', thus there is an urgent need for its revision. This has resulted in very strong, systematic, and significant relationship between satisfaction or dissatisfaction with neighbourhoods' planning patterns, and it is the most important relationship.

Table (53): Shows the reasons for satisfaction and dissatisfaction

Satisfaction and dissatisfaction			For social		For planning		For locational		Other reasons
Satisfied	(185)	84.1%	(95)	51.4%	(59)	31.9%	(134)	72.4%	(0) 0.0%
Dissatisfied	(34)	15.5%	(17)	50.0%	(27)	79.4%	(1)	2.9%	(1) 2.9%

Also there is a very strong, systematic, and significant relationship between satisfaction or dissatisfaction for locational reasons. This also has a very important relation in Table (53). This might confirm the notion that people's interpretation of the location is merely in terms of cognition and perception of

¹⁸(Summary Table 53)

¹⁹(Table 53)

the local environment and its surroundings, rather than in terms of the absolute location and distance to the most important centres, since the majority of those neighbourhoods are located in the peripheries of the towns as has been mentioned before. Thus the locational reasons in its mere sense is questionable in this context.

Table (54): Shows the relation between regional groups, satisfaction and dissatisfaction

Regional groupings	Satisfied		Dissatisfied	
1	(74)	89.2%	(9)	10.8%
2	(68)	85.0%	(12)	15.0%
3	(22)	71.0%	(9)	29.0%
4	(19)	79.2%	(4)	16.7%

Table (55): Shows the relation between length of residence in Khartoum area, satisfaction and dissatisfaction

Length of residence residence in Khartoum (years)	Satisfaction		Dissatisfaction	
0 - 10	(56)	82.4%	(12)	17.6%
11 - 20	(47)	78.3%	(12)	20.0%
over 20	(81)	89.0%	(10)	11.0%

11.3. Summary

- Residents in Greater Khartoum are satisfied with their existing environments but for various reasons, i.e., social relation, planning pattern, and location (distances to main centres), reasons. The locational reason is given in all cases (towns, neighbourhoods, etc.), despite the fact that most of the

neighbourhoods are in the peripheries of towns. Thus it is questionable in this context.

- Residents' in first class areas are satisfied with the physical planning, in second class areas they are satisfied with the physical planning and social environment, yet those in third class areas are satisfied with the social environment only.
- Generally, the bachelors is the only category that is dissatisfied with its environment for social isolation reasons, since they have no families, they are less sensitive to the environmental problems (spatially).
- An extended family could have a social relationship within a neighbourhood, proportional to the members of its household.
- Respondents' who have less knowledge of public parks in or around their neighbourhoods are satisfied with their social environments, more than those who have knowledge of such parks.
- Social environment satisfaction is a very important factor in the Sudanese context.
- Almost all the existing planning systems in the Khartoum area are unsatisfactory, and need urgent revision.
- The proximity of a region to the Khartoum area helps the increase of its population in Greater Khartoum, thus strong social ties (regional background). In short the socio-economic situation of a specific group affects residents' satisfaction or dissatisfaction with the existing built

environment.

- Respondents' interpretation to the locational reason is merely a cognitive one, related to their acquaintance with their neighbourhood and its surrounding, social and physical environments, and not in terms of distances to be covered to the main centres.

11.4. Conclusion

1. The locational reason (distance to main centres), is strongly related to residents cognition of the built environments (as have been mentioned before), physically and socially. Also the study has shown that the physical environment (planning, spatial), is not satisfying, hence one could argue that the location is strongly intermingled with the social satisfaction in the people's eyes, with the exception of a few cases, (as has been argued in the text).
2. In terms of social relationship (Fig: (60)), planning and design must express the implicit wishes of people, (Umdorman, Khartoum North and Tuti), to share amenities (spatial), with their neighbours, which is so common in the Sudanese society. Khartoum has a planning pattern which attracts a large minority of residents, but socially disperses the majority (Figs: (60) and (61)). This situation needs a very delicate balance between modernity (planning wise), and indigenous pattern to satisfy people's environmental ambition.
3. Satisfaction with the physical planning of an environment is

a function of the class of that environment. General satisfaction with the environment is a function of belonging to a family, thus a social life.

4. Daily tiny needs could be extended to spatial needs between adjacent neighbours.
5. Permanent stay in one environment could cause a person to lose his sense of location, distance and orientation.
6. The feeling of belongingness, possessiveness and social ties has a very strong influence on social satisfaction, thus environmental satisfaction.
7. Lack of public parks within a residential setting, (neighbourhood), could strengthen social relationship between neighbours, and this in turn could compensate people some of recreation needed in such public parks.
8. Social homogeneity is a very important factor in the eyes of the Sudanese people for environmental satisfaction.
9. The proximity of a region to the Khartoum area has an impact on the region population in Khartoum, in terms of regional and tribal relationship, as well as their economic and environmental situation. This situation in turn affects residents' satisfaction or dissatisfaction with the existing environment and what to do with it.
10. Residents in first class areas are satisfied with the planning pattern of their neighbourhoods, this does not guarantee a social relation satisfaction within these neighbourhoods. In

second class areas, the social relation factor is gradually replacing the planning (pattern) one. It is clear that, on one hand, the planning (pattern) satisfaction is the monopoly among the first class areas. On the other, the social relation satisfaction is linked to the lower class, (third class). In between is the second class, which have the characteristics of both other classes (social relation and planning pattern satisfactions).

Generally it could be concluded that the Sudanese people are satisfied with their environments. This satisfaction is varying between the different categories, i.e., town, class, neighbourhood, family type, accommodation etc. Also the reasons for such environmental satisfaction are varying too. For instance residents in first class areas are satisfied with the planning patterns of their environment and their counterparts in third class areas are satisfied with the social environment. This explicit variation will strongly resolve sub-problem (6), and support research issue (6), mentioned at the beginning of this chapter. Thus this fact in turn supports strongly the central assumption of the study mentioned in Chapter (4).

CHAPTER 12

THE IMPACT OF THE PLOT SIZE ON A FAMILY DAILY ACTIVITIES

Obviously the relation between the number of residents in a household and the plot area provided for their living could result in a state of crowding, especially in third class areas. This concept of crowding is of central importance in planning, urban design and architecture. It is hoped that this chapter will explore and discuss such relationship, and its impact on residential settings (first, second and third classes), in a Sudanese context.

The main problem

People from different cultures not only speak different languages, but in fact acquire different built environments to accommodate their diversified needs and socio-cultural behaviour. The Sudanese people are not an exception to this. So, does any attempt to change the indigenous Sudanese built environments, consciously or unconsciously, ultimately result in different socio-cultural behaviour which might have serious social and psychological problems?

Sub-Problem (7)

Does the state of crowding in some Sudanese houses, compel most residents to look for psychological compensation in the form of leisure time in parks' visits, as well as in streets and near open spaces?

Research Issue (7)

Does the Sudanese house's plot size and the corresponding family size have an impact on the family's daily activities, social activities, recreation and social visits?

12.1. Introduction

There has recently been some widely spread re-examination and redefinition of the concept of crowding,¹ yet while crowding is clearly related to density, the latter concept has not received similar attention. At the same time, the distinction between density and crowding continues to be recognised, and there have been two principle ways of distinguishing between them:

- .a. Density can be seen as a site measure, and crowding as a measure of density within the dwelling.
- .a. Density can be seen as a measure of people per unit area, and crowding as a negative perception of excessive density – a subjective experience of sensory and social overload.

Many of the new definitions of crowding are related to the second of these – the notions of overload, excessive interactions, and the like. These redefinition, then, hinge on the concept of the negative subjective experience of certain density levels. In most work the stress has been on the experience of excessively high density levels. The negative subjective experience may also be of excessively low degrees of interactions, i.e., of too low densities which may be called isolation for want of a better term. It thus seems that crowding defined as a subjective experience is somehow related to density. Presumably, the latter is a more objective measure of the presence of other people and their distribution in space.²

It seems clear that density and crowding (the negative perception of density)

¹Stokols, 1972, 1973; Stokols et al, 1973; Esser, 1971a, 1971b, 1972; Desor, 1972; Kutner, 1973

²Amos Rapoport, *Environment and Behaviour*, June 1975, pp. 133 – 134

are related to the experience of other people (and their environmental products) while privacy can be understood as the ability to exclude such experiences at will,³ in the various sensory modalities.⁴ Thus we can see crowding as unwanted interaction leading to overload, and privacy as the ability to control interaction, i.e., to avoid unwanted interaction. Perceived density can then be seen as an aspect of environmental quality in terms of interaction and sensory information through all sense modalities, and relationships become more important than elements,⁵ (physical environmental elements).

Density and crowding are both related to information, thus both Turkeys and Yagua Indians solve privacy problems by facing outwards and avoiding information and interaction.⁶ More generally, both among animals and people, density in terms of individuals per unit of area is not sufficient and perceived density is a function of relationships. For instance the Sudanese people accept the fact that relatives have residential rights, regardless of the state of crowding in a house. In such circumstances, as has been mentioned before, people expand their spatial needs at the expense of the street. It is possible to list some of the characteristics of the environment which should lead to high and low perceived densities.⁷ These characteristics may be perceptual: tight and intricate spaces, large building height to space, many signs, many lights and high artificial light levels, many people (or their sign) visible, most man-made, high noise levels, many cars, high traffic density and much parking lead to high perceived density: these are sensory stimuli indicating the

³Chapter (3)

⁴Rapoport 1972 (b); 1975 (b)

⁵Rapoport 1969 (e)

⁶McBride 1970, p.141; Rapoport 1967 (b)

⁷Rapoport 1975 (b)

presence of people. They may be associational and symbolic - tall buildings may indicate high density even when spaces and other perceptual cues indicate low density, as may the absence of private gardens (or yards) and entrances in residential areas. There are temporal aspects such as fast tempos and rhythms, and activities extending over the whole 24 hours indicating high density, their opposites - low. There may be physical/socio-cultural characteristics such as the absence of defences, high level of "attractive stimuli",⁸ absence of other spaces, presence of non-residential uses in residential areas and mixed land-uses generally indicating high perceived densities, their opposites - low. There may, finally, be socio-cultural characteristics related to social interaction levels, feelings of lack or presence of control or choice, social heterogeneity or homogeneity and hence culturally shared rules, defences and so on resulting in high and low perceived densities respectively.

Clearly most of these are related to information rates so that physical characteristics lead to perceived densities which, after matching and evaluation lead to affective densities i.e., a feeling of crowding and isolation.⁹ This would seem to be the reason why housing which is satisfactory in terms of density information rates for young people with children have rates which are too high for the elderly who lack stimulation,¹⁰ and much of the literature on street supports this view.¹¹ Perceived density is tested against certain norms, expectations and adaptation levels and evaluated as either too high (crowding), too low (isolation) or just right. Thus crowding is equivalent to the inability to

⁸Lipowski 1971)

⁹Rapoport 1975(b)

¹⁰D.O.E. 1972

¹¹Rapoport, in Press (b)

handle certain levels of information.¹²

It is also significant that there are differences between spatial and social density: at a given space per capita an increase in group size, or deduction in space have different effects, and so does the nature and meaning of the group. With large groups and strangers presence there would be more information overload since a major defence mechanism is keeping groups homogeneous. Thus in China, the same space per capita is less stressful when the group is related than when it is not.¹³ Generally, when the number of people in space goes up this increases cognitive complexity and uncertainty so that behaviour is more difficult to organise; when the amount of space per person is reduced other people become more salient as stimuli and, once again, behaviour is more difficult to organise. Acting together they lead to maximum information overload.¹⁴ Whether site crowding is worse than room crowding¹⁵ or not, it is always a matter of the presence of other people¹⁶ and undesired clustering is likely to be worse than heterogeneity.¹⁷

12.2. Behavioural Analysis

12.2.1. Profile Activities Sequences

Although the techniques used in analysing the observational data (Histograms and Graphs), so far, have limited benefits in tackling hidden aspects of the data, the author has proposed a technique by which use we could have more

¹²Esser 1973; Rapoport 1975 (b), in Press (c)

¹³Mitchell 1971; Anderson 1971

¹⁴Saegert 1973

¹⁵Schmidt 1966

¹⁶Plant 1930; Schorr 1966

¹⁷Rapoport 1977, p. 202

insights into the data than the traditional ones and coined it a "Profile Activity Sequence".¹⁸ It deals with two aspects of vital importance in any given activity, time and space. In the current study it is dealing with the relationship between the sequence of activities in time and the place of occurrence of these activities (space). However, it could be useful if applied in similar studies. The usefulness of the technique in this specific study, could be summarised in the following:

1. It demonstrates clearly where the concentration of activities is, and which is the most used and busy part of the environment (private, semi-private, or public) in any given neighbourhood? Thus better utilisation of space and time could be achieved. Also it shows the physical elements that contain activities.
2. It shows explicitly the relationship between the private, semi-private and public parts of the environment, in the following forms:
 - a. If the neighbourhood has some transparent fences, the reflection of which would be manifested in a direct transition of activity sequence from the private part to the public one. This tells us that there is a direct visual contact between the private and the public. This normally occurs within the interaction activities. The concrete manifestation of this are the cases

¹⁸Figs: (68 - 74); Appendices (36 - 42)

of El Amart, El Mulazmean (2) and the Safia;¹⁹ these are mainly upper class areas. However when found in third class, it is mainly linked to instant opening of the main entrance door. It is noted that such transitional activity is coupled with another transitional activities in the opposite direction,²⁰ i.e., private-public, and public-private and vice versa.

- b. If the distribution of the activity sequences are reasonably shared between the private and semi-private and between semi-private and public, as the case of El Amart, Khartoum (2), El Mulazmean (1), and El Mulazmean (2),²¹ this phenomenon could be interpreted that: (i) the traffic is reasonably light or negligible, thus has no influence on residents' behaviour (Chapters 8 and 10), in which case there could be an integration of spaces, creating a progression of activities between private and semi-private on the one hand, and between the semi-private and public on the other. What is clearly noticeable in these examples is that the activities are to some degree shared between the three areas, with concentration in the semi-private; (ii) the

¹⁹Figs: (68a+b) and (69)

²⁰Ibid, Figs: (68a+b) and (70)

²¹Figs: (68a+b), (69) and (70a)

existence of a front yard is very important in these cases. Without which very few activities could take place in the private part, as the cases of El Deium, El Sika Hadeed, El Hilla El Gadeida and Falata;²² (iii) lastly the existence of trees and narrow alleys have considerable contribution in maintaining the flow of activities in hot days (the cooling affect). As each of the examples given above (neighbourhoods), has met one or more of these criteria.

- c. It is very clear that the degree of traffic in the street has played a very major role in influencing the magnitude of activities in that specific street (Chapters 8 and 10), as follows: (i) if the traffic is light or a front yard is in existence, as well as trees and narrow alleys, it will be a typical case to that mentioned in (2) above; if the traffic is minimal, or is not existing at all (*Tuti*), the activities will mainly concentrate in the public part of the street, as the cases of El Rikabia and Tuti;²³ (iii) if the traffic is at acceptable level and plots are small, activities mainly take place in the semi-private and some in the public, i.e., El Sahafa, El Dangala, El Thorah, El Sika Hadeed, El Hilla El Gadeida, Umbadah, Falata, Bait El Mal, El

²²Appendices (36) and (38); Fig: (74)

²³Fig: (70); Appendix (42)

Murgania and El Deium;²⁴ (iv) if the traffic is heavy and the house has a reasonable front yard, the activities will take place in the semi-private and private yards. However when the traffic is lessened after noon, residents shift their activities to the public part of the street, i.e., El Safia;²⁵ (v) if the neighbourhood is originally an indigenous one and replanned recently to allow for traffic and the houses have reasonable front yards, we could have a situation typical to (i) above, but the progression of activities here is mainly between semi-private and public parts, i.e., El Mawradah, El Gerief West, Hilat Hamed. and Shambat.²⁶

3. It is noted that some activities in many cases were happening sequentially in the same space.²⁷ The sequentiality of such activities in a specific space is linked to the physical characteristics of the street in question. The grouping of patterns of activities sequentially for all neighbourhoods has produced more or less typical results to the previous groupings (Chapter 2):

a. Group (1): has few sequential activity groups: occurring mainly in upper classes (first and

²⁴Figs: (69); (73) and (74); Appendices (36); (38); (40) and (41)

²⁵Figs: (72) and (74)

²⁶Appendices (37); (39); (41) and (42)

²⁷Figs: (68 to 74); Appendices (36 - 42)

second). The few sequentiality is mainly due to the limited or few activities in the street, which has been affected by the population density. The sequential activities took place mainly in the private and semi-private areas. Except in the cases of El Murgania and El Mulazmean (2),²⁸ where some sequential activities took place in the public part of the street. However their overall picture of the activities in public areas does not show any significant sign that these two neighbourhoods are third class ones. Since the concentration of activities is mainly in the semi-private area, and a considerable amount in the private area, and few in public area, which is a sign that they are not third class areas.

- b. Group (2): This group is mainly concerned with planned third class neighbourhoods in general. Regardless of the plot size, width of the street, physical forms of the houses, availability of front yard and population density. What is shared between them, is that they are third class, have grid-iron planning, have limited plot sizes (except Umbadah,²⁹ for the last two points), and comparatively have wider streets. The sequential activities in these neighbourhoods took place

²⁸Figs: (70) and (73)

²⁹Appendix (38)

mainly in the semi-private area, very moderate in the public area and very few in the private area. The neighbourhoods under this group are: El Sahafa, El Deium, El Dangala, El Thorah, El Sika Hadeed, El Hila El Gadeida, Umbadah and Falata.³⁰ It amalgamates four groups of the previous groupings.³¹

- c. Group (3): it consists of replanned indigenous neighbourhoods, such as El Mouradah, El Gerief West, Shambat, Bait El Mal and Hilat Hamad.³² What is common between them is that they are considered third class areas (Chapter 2), off main traffic routes, have reasonably wide alleys to accommodate cars, and tribally homogeneous. The sequential activities were distributed between the private, semi-private and public areas, with more concentration on the semi-private areas, except Bait El Mal. This might be due to the fact that more strangers were passing through its street to other parts of the neighbourhood. For this reason residents in Bait El Mal were keeping their main entrance door shut.

³⁰Figs: (69) and (74); Appendices (36); (38) and (40)

³¹Chapter (2)

³²Appendices (37); (39); (41) and (42)

d. Group (4); It is the last group and consists of El Rikabia and Tuti.³³ What is shared between them is that both are indigenous, with narrow alleys, segregated and protected from main traffic routes by a series of narrow alleys scatters around the street under consideration. The sequential activities were densely occurring in the public part of the street. This could be due to the minimal or no car movement in the alleys.

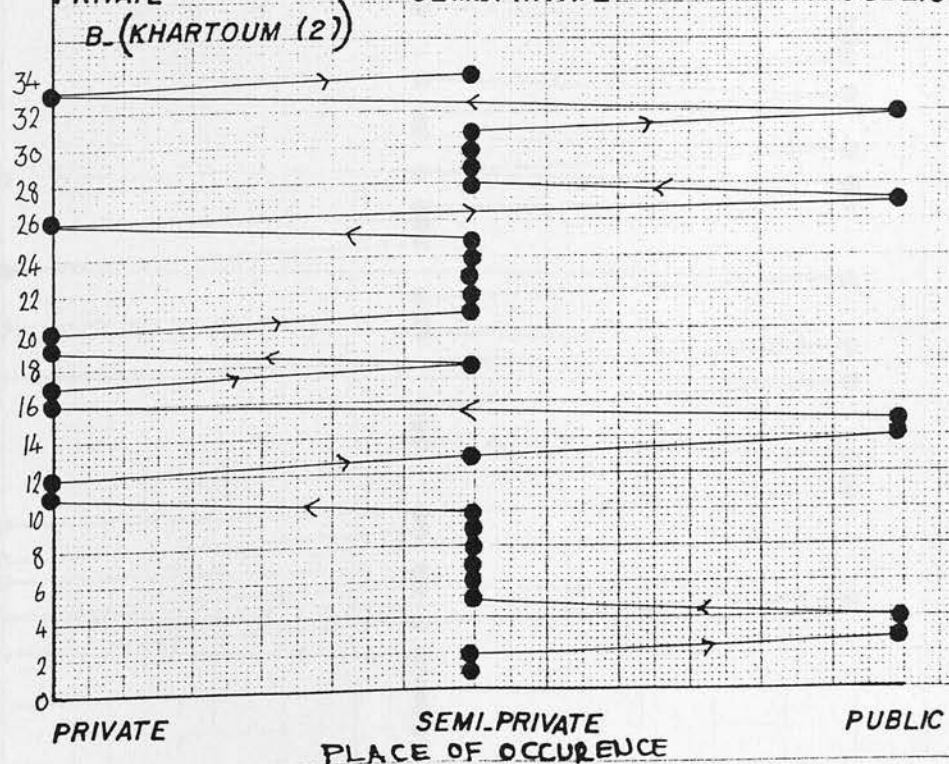
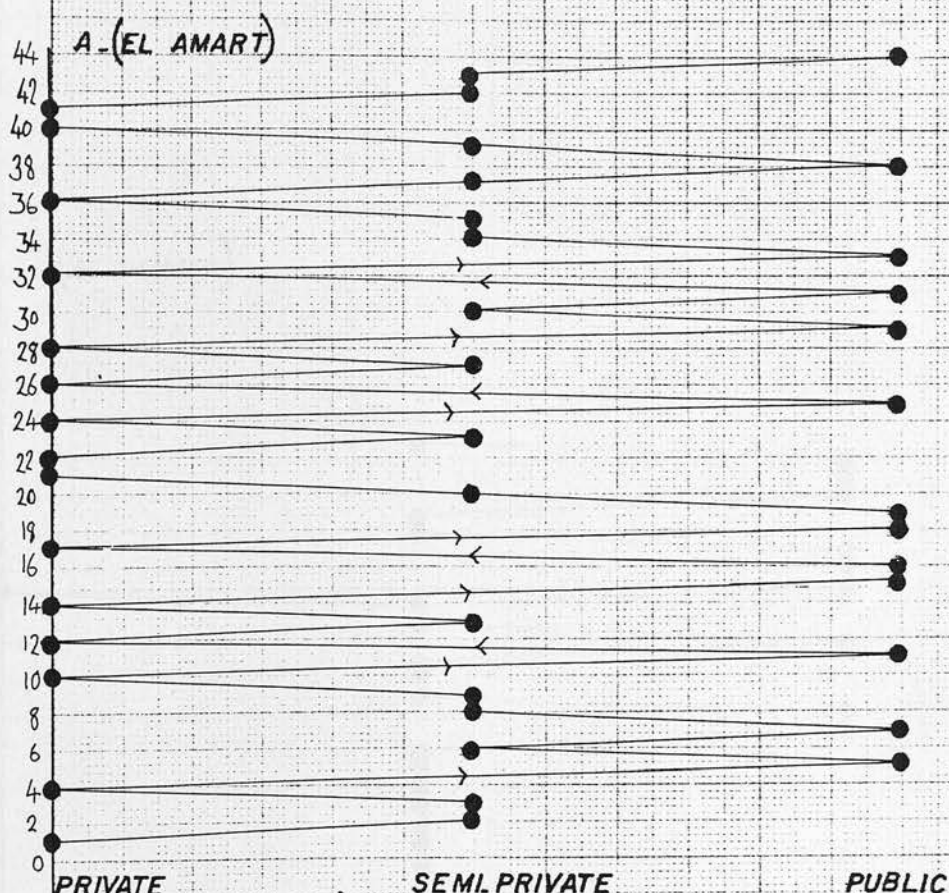
However coincidence of activities in time were happening in many neighbourhoods too, shown by dotted line connecting the coincided activities,³⁴ which could be due to the business of the streets, except Al Amarat, Khartoum (2), El Sika Hadeed and Bait El Mal. This exception could be due to the population density. It is noted that for the rest of neighbourhoods, the coincidence of activities in time, were mainly in private areas on one hand and semi-private and public areas on the other. This phenomenon is due to the fact that, the coincided activities in private areas are mainly quick pop-out and interactions through the main entrance, because of the two-metre high solid walls. This sudden and quick popping-out and interaction, could coincide with other activities in semi private and public areas.

12.3. Questionnaire

³³Fig: (71); Appendix (42)

³⁴Figs: (69) and (74); Appendices (37); (40) and (41)

Fig: 68 PROFILE ACTIVITY SEQUENCES.



PLACE OF OCCURENCE

Fig: 69 PROFILE ACTIVITY SEQUENCES

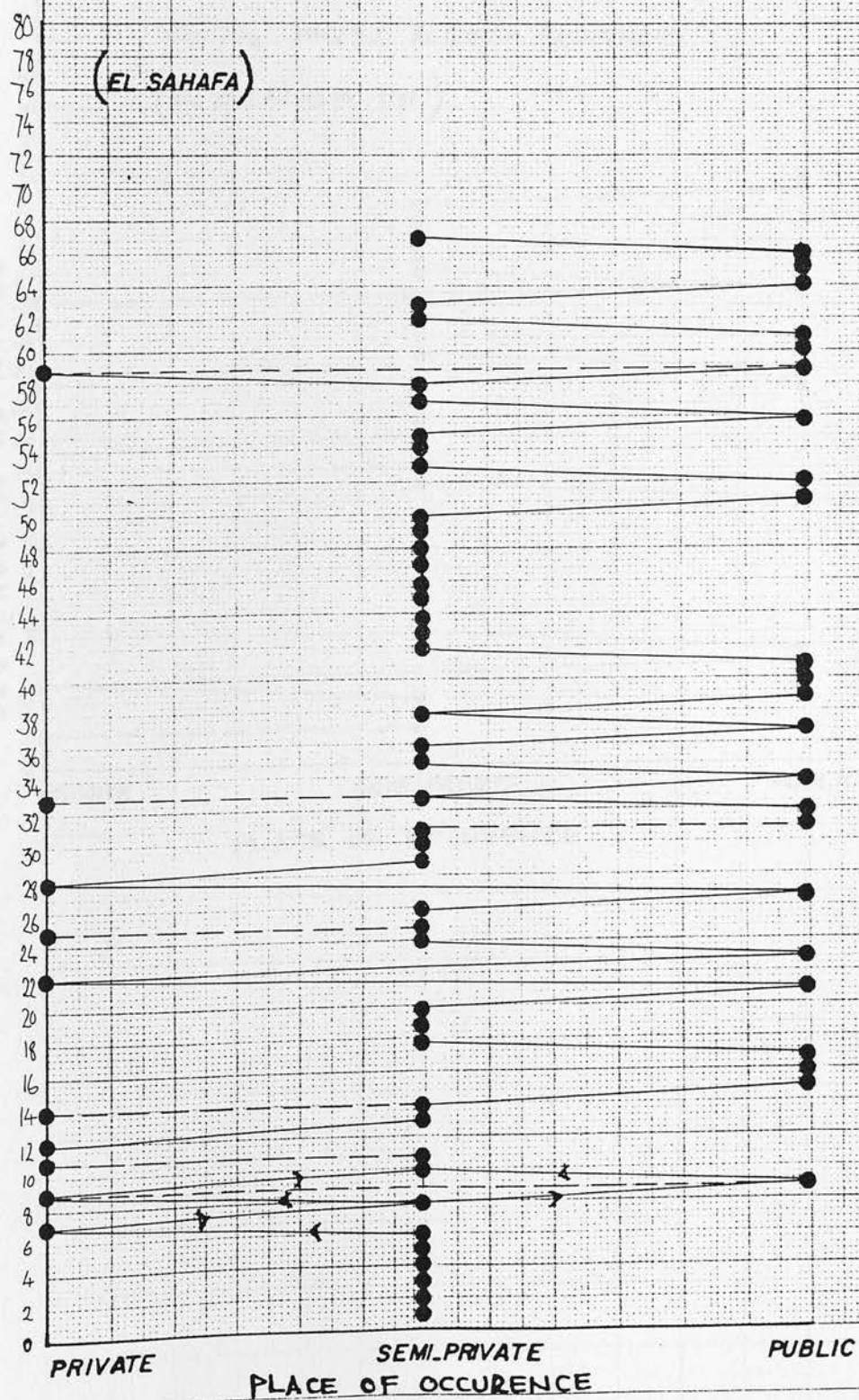


Fig: 70a PROFILE ACTIVITY SEQUENCES

(EL MULAZMEAN (1st))

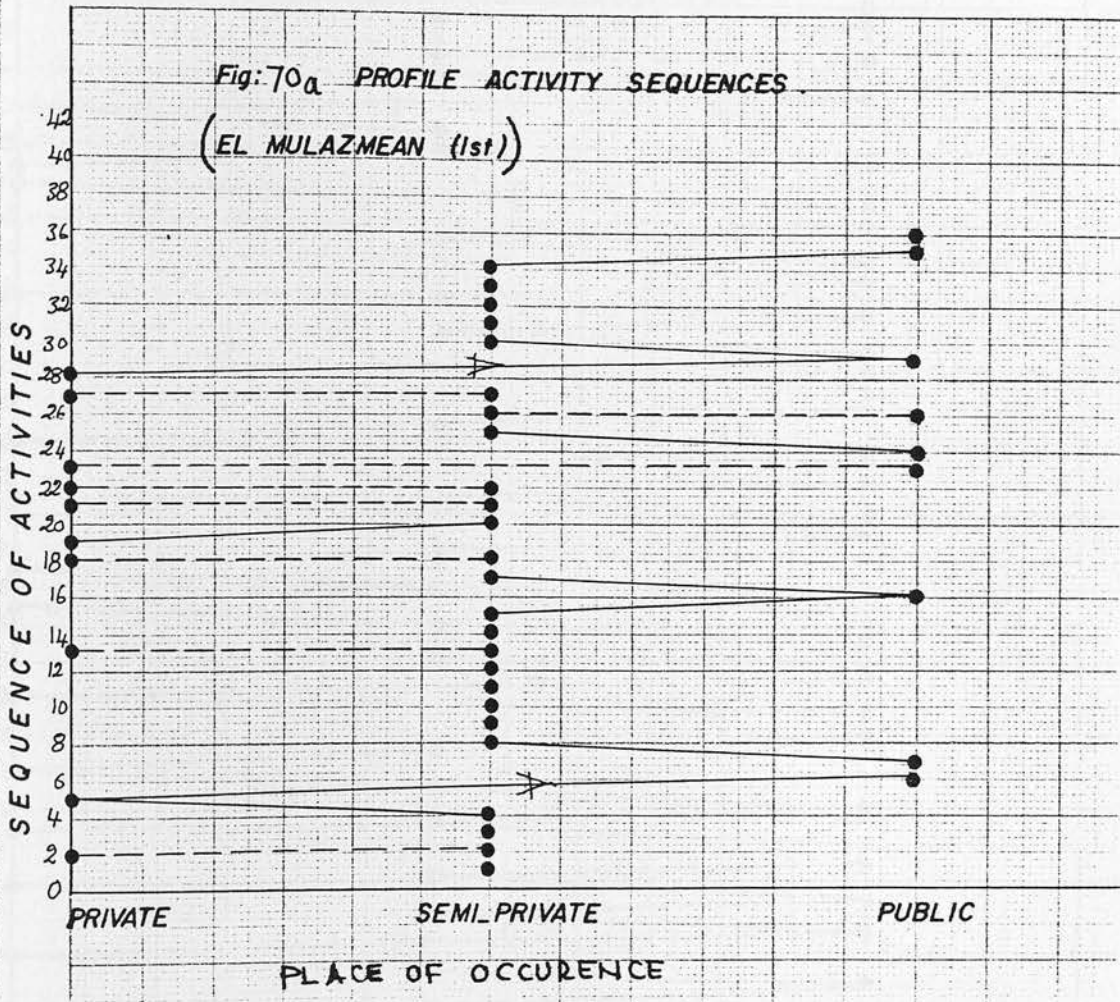


Fig. 70b PROFILE ACTIVITY SEQUENCES.
(EL MULAZMEAN (2nd))

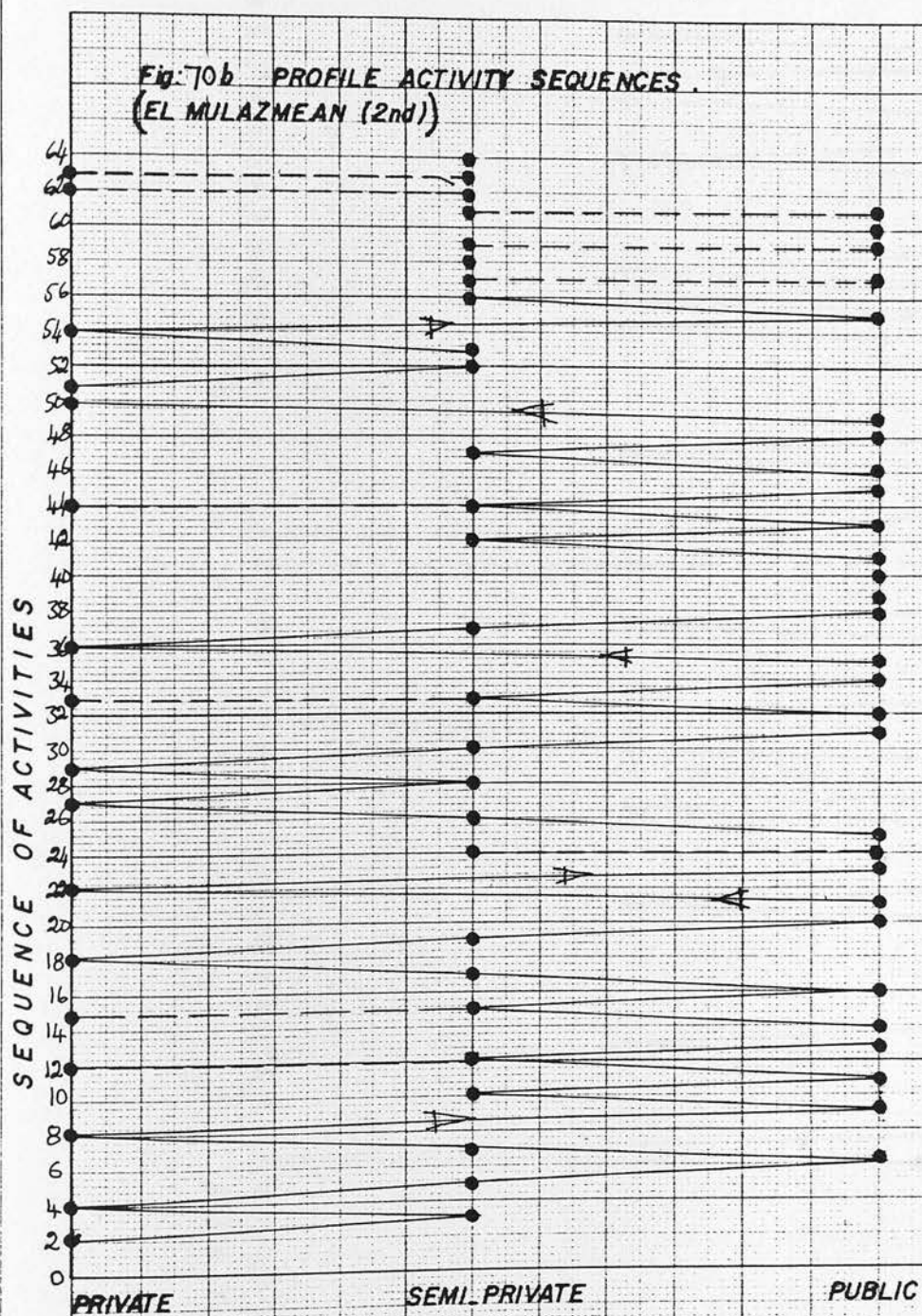


Fig:7| PROFILE ACTIVITY SEQUENCES.

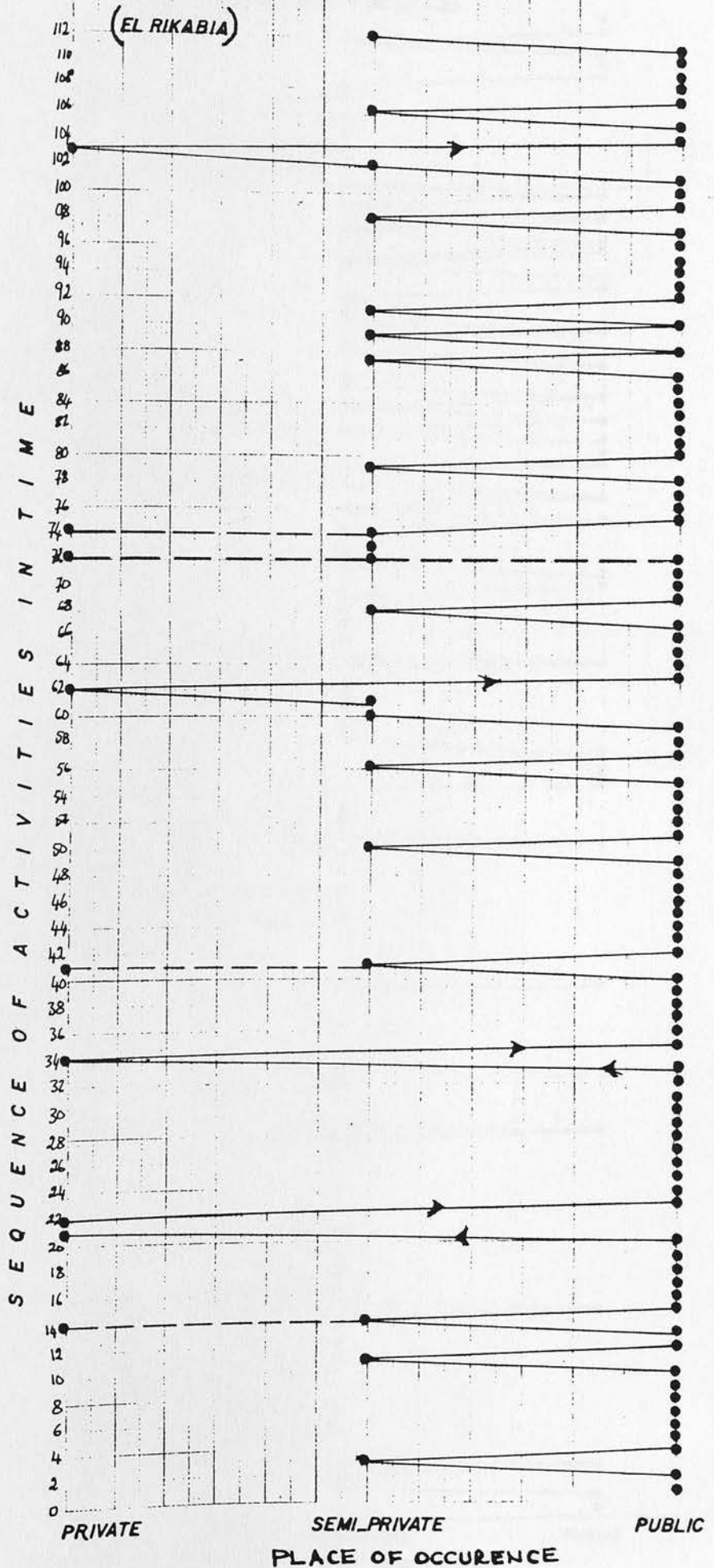


Fig: 72 PROFILE ACTIVITY SEQUENCES.
(EL SAFIA)

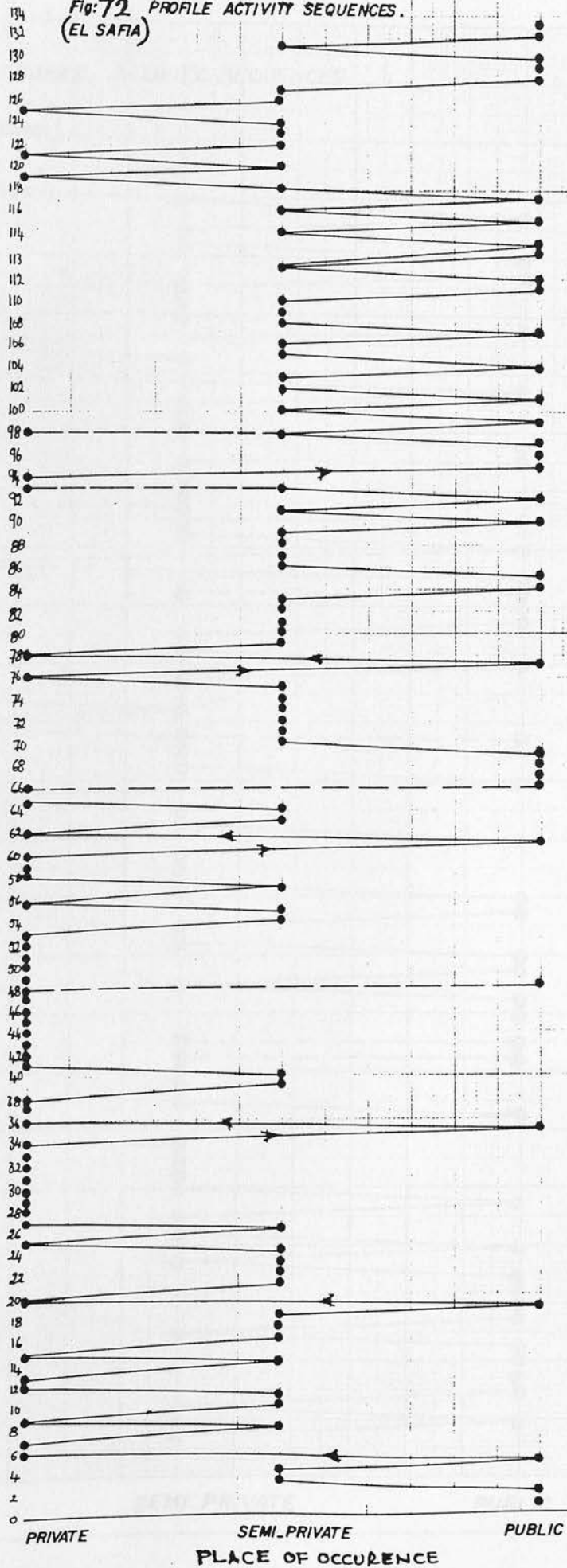


Fig:73 PROFILE ACTIVITY SEQUENCES

(EL MURGANA)

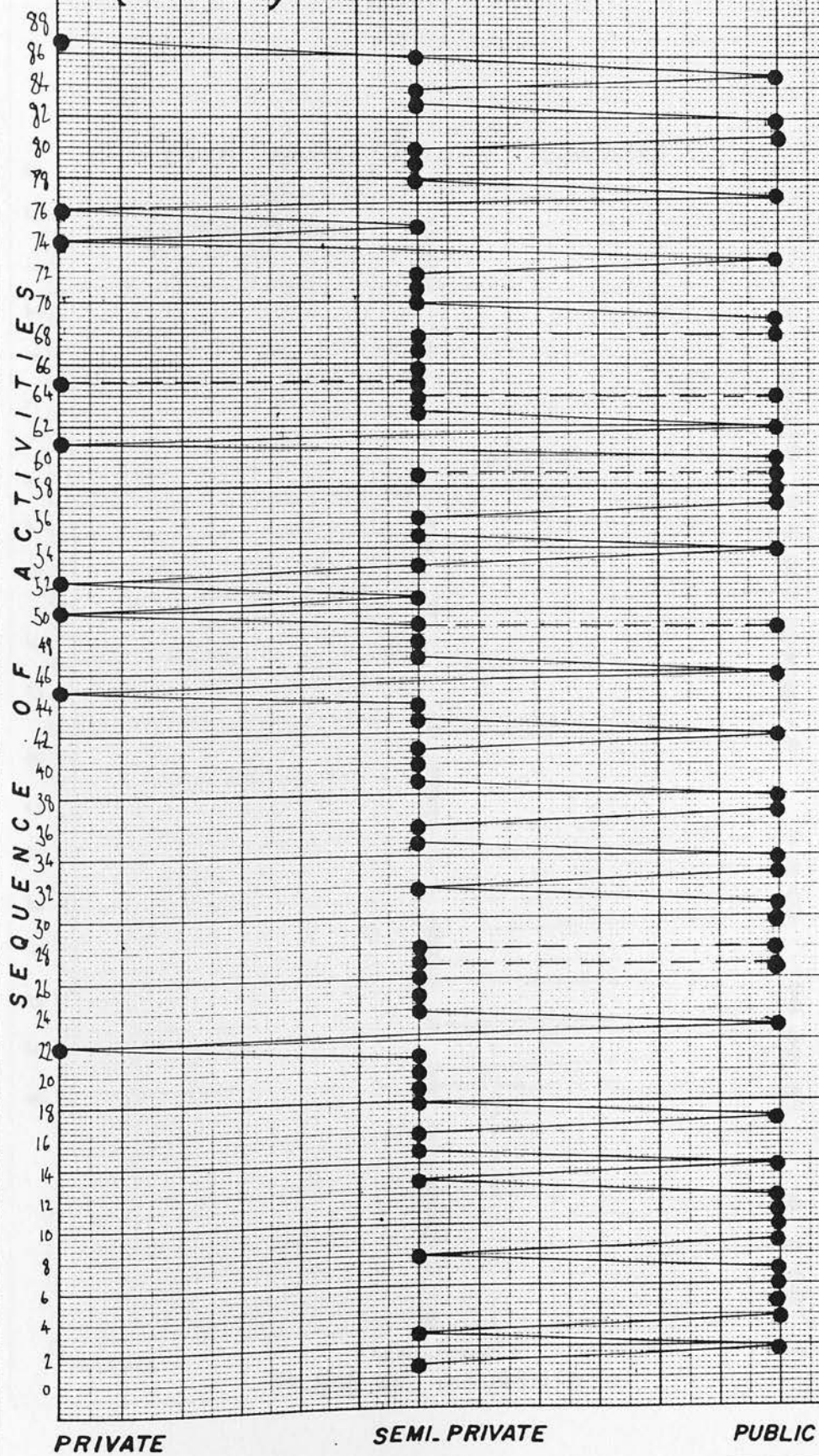


Fig 74 PROFILE ACTIVITY SEQUENCES.

SEQUENCE OF ACTIVITIES

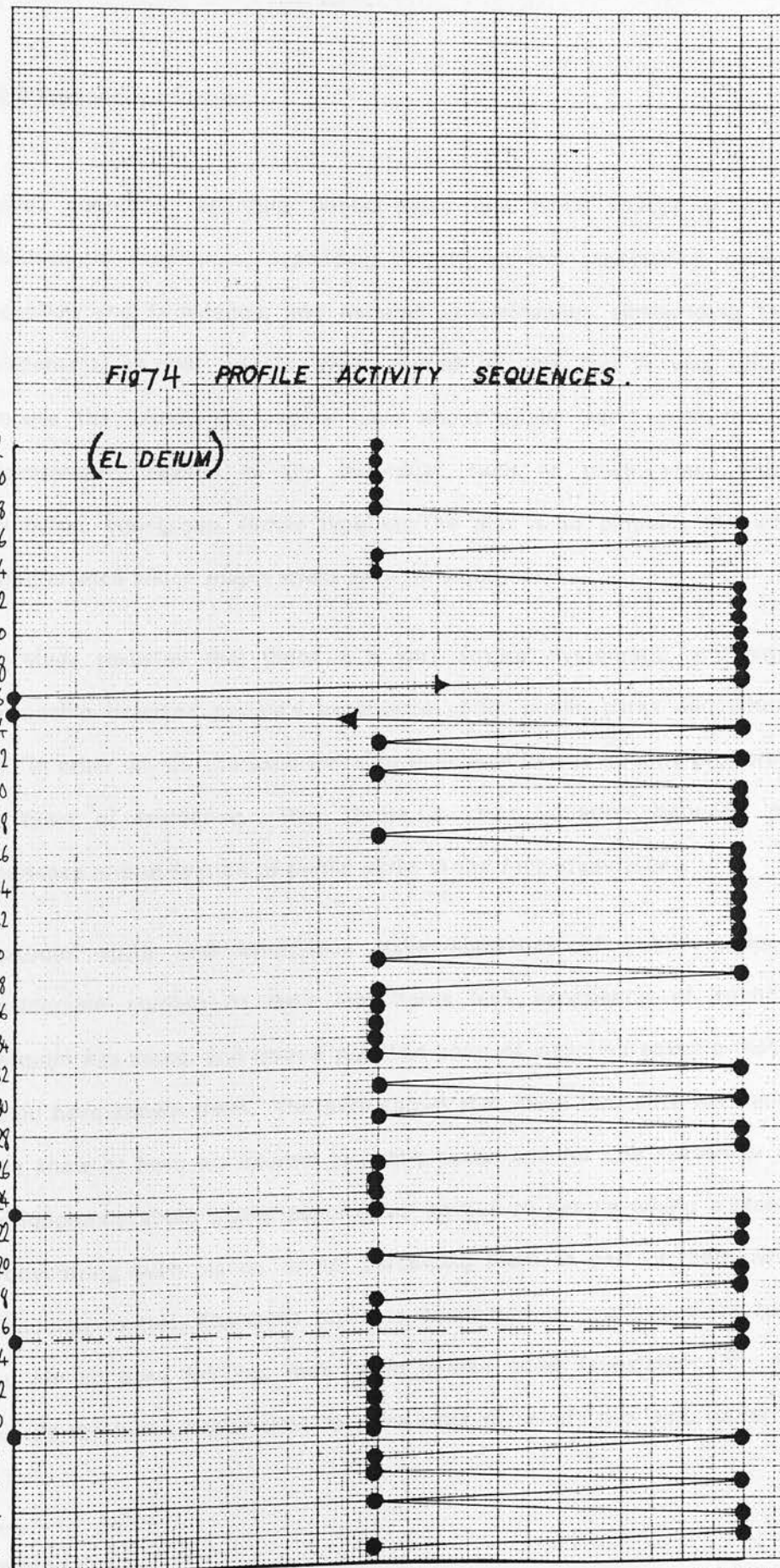
(EL DEIUM)

PRIVATE

SEMI-PRIVATE

PUBLIC

PLACE OF OCCURENCE



12.3.1. Frequency of visits

Peoples cognition regarding public parks and open spaces is purely an individualistic experience, depending largely on the personality, own views, perception and knowledge, and general circumstances surrounding the built environment, as well as life style. Based on this fact it was decided to compare the experience people have about public parks with the general circumstances, related to the individual, such as town, class, education, occupation, age-group, family type etc. The aim is to pinpoint the individual characteristics which might affect such an experience.

The study revealed that there is a very strong, systematic, and significant relationship between people's experience about public parks and where they live. In other words, the experience an individual has, is directly proportional to his town of residence. This shows a clear variation between people's experience and utilisation of public parks in the four study areas.

Khartoum North and Umdorman have shortages of public parks, so a considerable number of their inhabitants lack experience of public parks. Khartoum has some, and from a practical point of view, we assume that people should have known them. The data shows that more than fifty per cent either don't know or have no interest in public parks, and for one reason or another this ignorance about public parks could be due to people taking a stand point of boycotting such places, or not perceiving them as part of their own town. In addition to this, Khartoum North is dominated by working class residents, who are so busy fulfilling their basic human need, (subsistence)³⁵. So they devoted the bulk of their time to extra work to satisfy this aim, rather than in

³⁵Chapter (11)

recreation, which will come after fulfilling the basic needs. However in Tuti, people are locally self-sufficient, through the utilisation of the fruit gardens on the banks of the rivers for such purposes.

Residents in the four study areas, do pay visits to public parks at varying frequencies.³⁶ This might be for recreational, psychological, or socialisation purposes, such as having a meal, or attending national ceremonies etc., or to visit relatives and friends, for social or religious reasons, since Islamic teachings are so critical about kinship ties and visits. The rhythm and frequency of visits explicitly tell us what are the reasons behind the visits. For example, a weekly visit, although it could be to parks or relatives, is mainly to parks.³⁷

When comparing the rhythms and frequencies of visits,³⁸ with the reasons behind the visits,³⁹ it is clearly manifested that the majority of respondents in the four study areas do pay monthly visits which are mainly directed towards visiting relatives for social and religious reasons. However, the study revealed that the majority of those who pay weekly visits, do so for recreational and psychological reasons, especially in Umdorman.⁴⁰ Finally the majority of those who pay annual visits do so to attend national and religious ceremonies, especially in Khartoum and Tuti.⁴¹

³⁶Ref. Table (56); Fig: (41)

³⁷Ref: Table (57)

³⁸Ref: Table (56)

³⁹Ref: Table (57)

⁴⁰Fig: (75)

⁴¹Ref: Tables (56) and (57)

Table 65: Shows the frequency of visits to parks and relatives in the four study areas

Town	Weekly visits		Monthly visits		Yearly visits		No visits	
Khartoum	(11)	12.2%	(70)	77.8%	(51)	56.7%	(4)	4.4%
Umdorman	(36)	52.2%	(44)	63.8%	(29)	42.6%	(0)	0.0%
Khartoum N.	(13)	24.1%	(44)	81.5%	(21)	38.9%	(0)	0.0%
Tuti	(2)	28.6%	(5)	71.4%	(4)	57.1%	(0)	0.0%

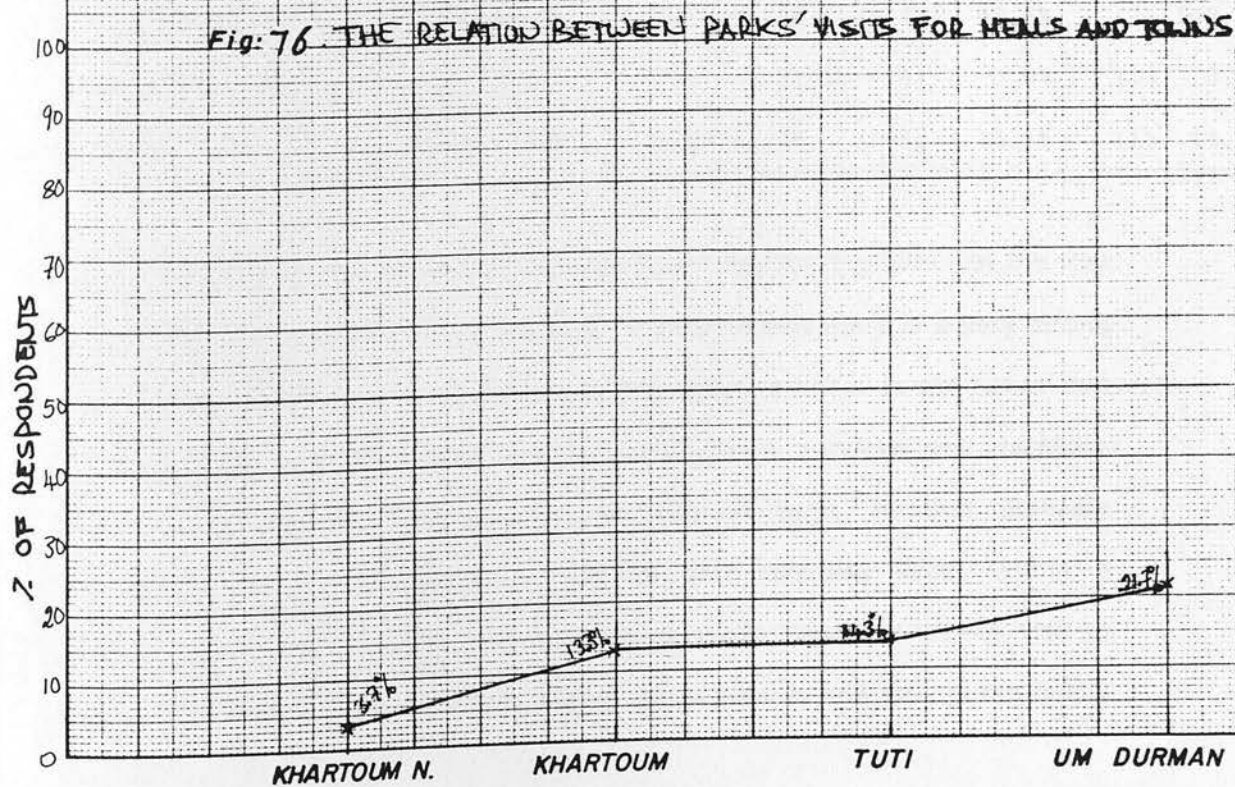
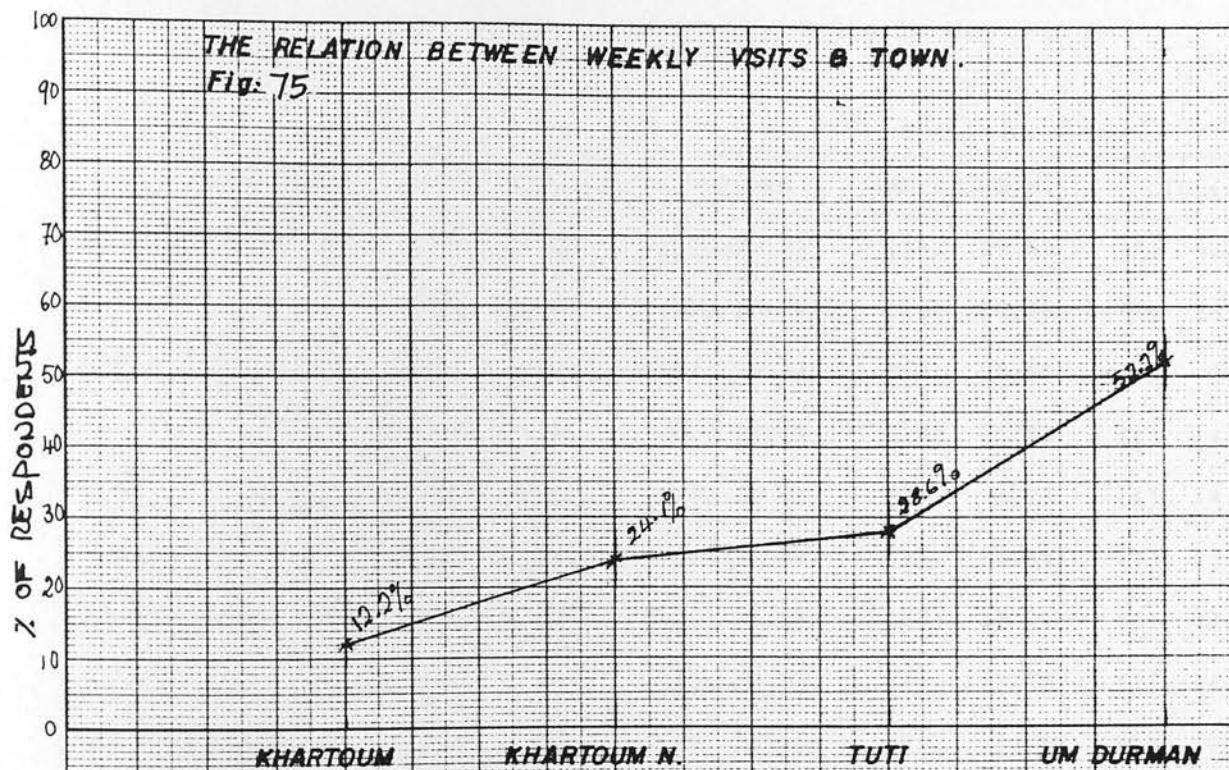


Table 57: Shows the reasons behind the visits in the four study areas

Reason for visit	Khartoum	Umdorman	Khartoum N.	Tuti
National ceremonies	(46) 51.1%	(26) 37.7%	(16) 29.6%	(4) 57.1%
Contact	(27) 30.0%	(23) 33.3%	(13) 24.1%	(2) 28.6%
Isolation	(6) 6.7%	(0) 0.0%	(3) 5.6%	(0) 0.0%
Rest	(23) 25.6%	(20) 29.0%	(14) 25.9%	(1) 14.3%
Meal	(12) 13.3%	(15) 21.7%	(2) 3.7%	(1) 14.3%
Fresh air	(36) 40.0%	(29) 42.0%	(21) 38.9%	(4) 57.1%
Nice scenery	(41) 45.6%	(24) 34.8%	(20) 37.0%	(3) 42.9%
Secured	(9) 10.0%	(11) 15.9%	(4) 7.4%	(1) 14.3%
Nicely arranged	(14) 15.6%	(10) 14.5%	(2) 3.7%	(0) 0.0%
Lovely	(29) 32.2%	(20) 29.0%	(14) 25.9%	(2) 28.9%
Lively	(21) 23.3%	(13) 18.8%	(9) 16.7%	(3) 42.9%
Close to house	(6) 6.7%	(8) 11.6%	(2) 3.7%	(1) 14.3%
Nice services	(10) 11.1%	(5) 7.2%	(3) 5.6%	(0) 0.0%
Visit relatives	(74) 82.2%	(65) 94.2%	(52) 96.3%	(7) 100.0%
Socialisation	(1) 1.1%	(3) 4.3%	(0) 0.0%	(0) 0.0%
Others	(10) 11.1%	(22) 31.9%	(3) 24.1%	(1) 14.3%

There is a very strong, systematic and significant relationship between the four study areas and a weekly visit frequency. In other words there is a very strong link between a city or a town and the weekly visits to parks, in the sense that in areas lacking public parks and its concomitant services and facilities, residents do pay frequent visits to the nearest parks. Another probable explanation of this relationship, could be that relatives living within a reasonable proximity to each other might have a rotational and weekly visit to each other, so as to discuss family affairs, social matters and strengthen family

ties.

Although very few residents in the four study areas do visit parks to have meals, there is some variation between them. Also there is a systematic, and significant relationship between study areas, and park visits for meals⁴². This could be interpreted thus, the need for recreational and psychological (contact, isolation, fresh air, etc), pursuit increases with the lack of recreational areas within the same context.

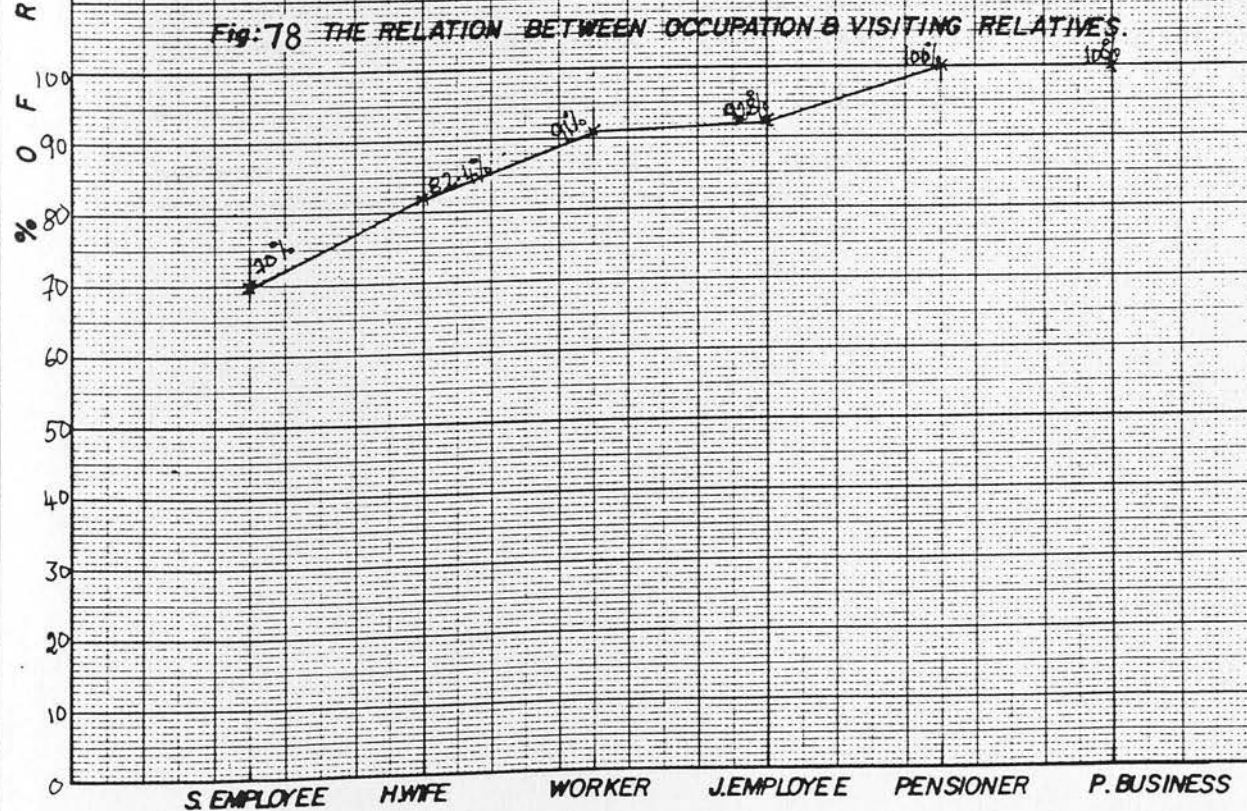
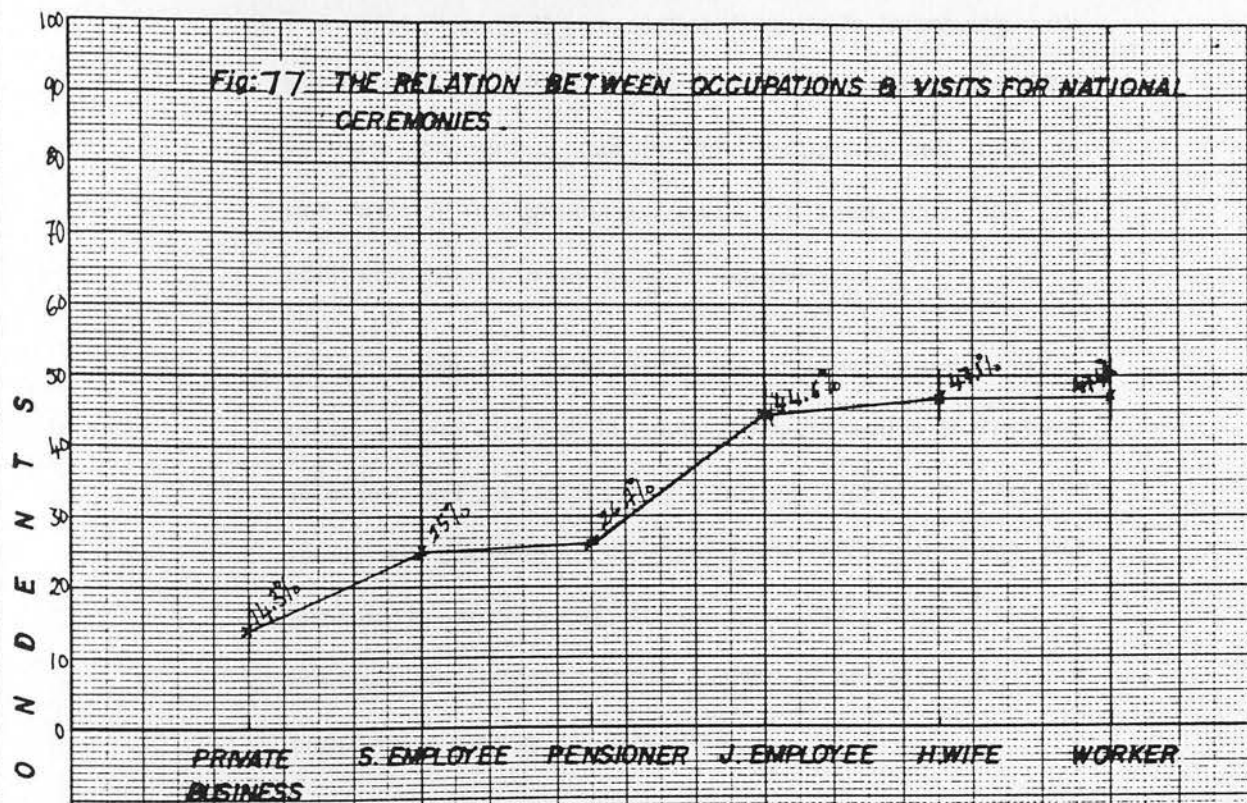
Also there is a very strong, systematic and significant relationship between people visiting relatives and friends and the four study areas. This could mainly be attributed to homogeneity.

The data shows that the recurring trend of monthly and annual visits have been repeated again with other categories, and with monthly visits as the main frequency of visits.⁴³ The following features have been noticed in these relationships:

1. The monthly and annual visits will certainly have some spatial and functional implications on the recipient setting or place, whether that be a public park or a relatives' house. So spatial and functional facilities considerations should be given in both cases.
2. The bulk of the Sudanese are socially oriented rather than recreationally. This is mainly due to the social obligations which are exerted among families, as well as the lack of proper and culturally arranged parks and open spaces.

⁴²Fig: (76)

⁴³Tables (58) - (69); Figs (77) - (80)



3. The perception of the recreational needs is improving with the level of education . This finding is not systematically accurate throughout, due to local circumstances, such as the case of the graduates (class not matching), and the adult educational group is under represented.
4. For economic and social spatial reasons the extend family is on its way to diminish in urban areas for some of the time to come, and be replaced by a nuclear family. This nuclear family will continue to maintain some links with clans and families in other cities, towns or home villages, and to maintain the Sudanese family system of social security and cooperation among the community.

Table (58): Shows frequencies of visits and types of families

Type of family	Weekly		Monthly		Annually		No visits	
Integrated	(28)	33.3%	(60)	71.4%	(43)	51.2%	(0)	0.0%
Nuclear	(32)	25.8%	(92)	74.2%	(56)	45.2%	(4)	3.2%
Bachelor	(2)	16.7%	(11)	91.7%	(6)	50.0%	(0)	0.0%

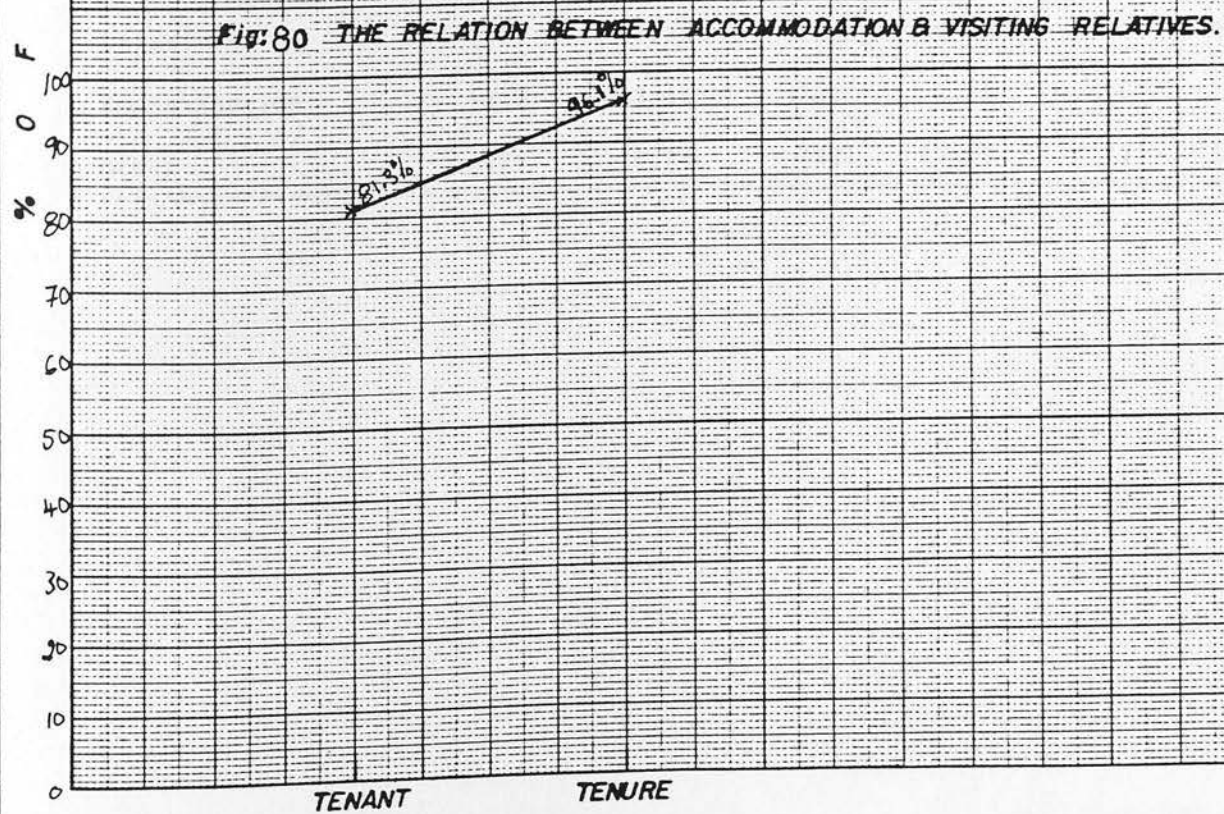
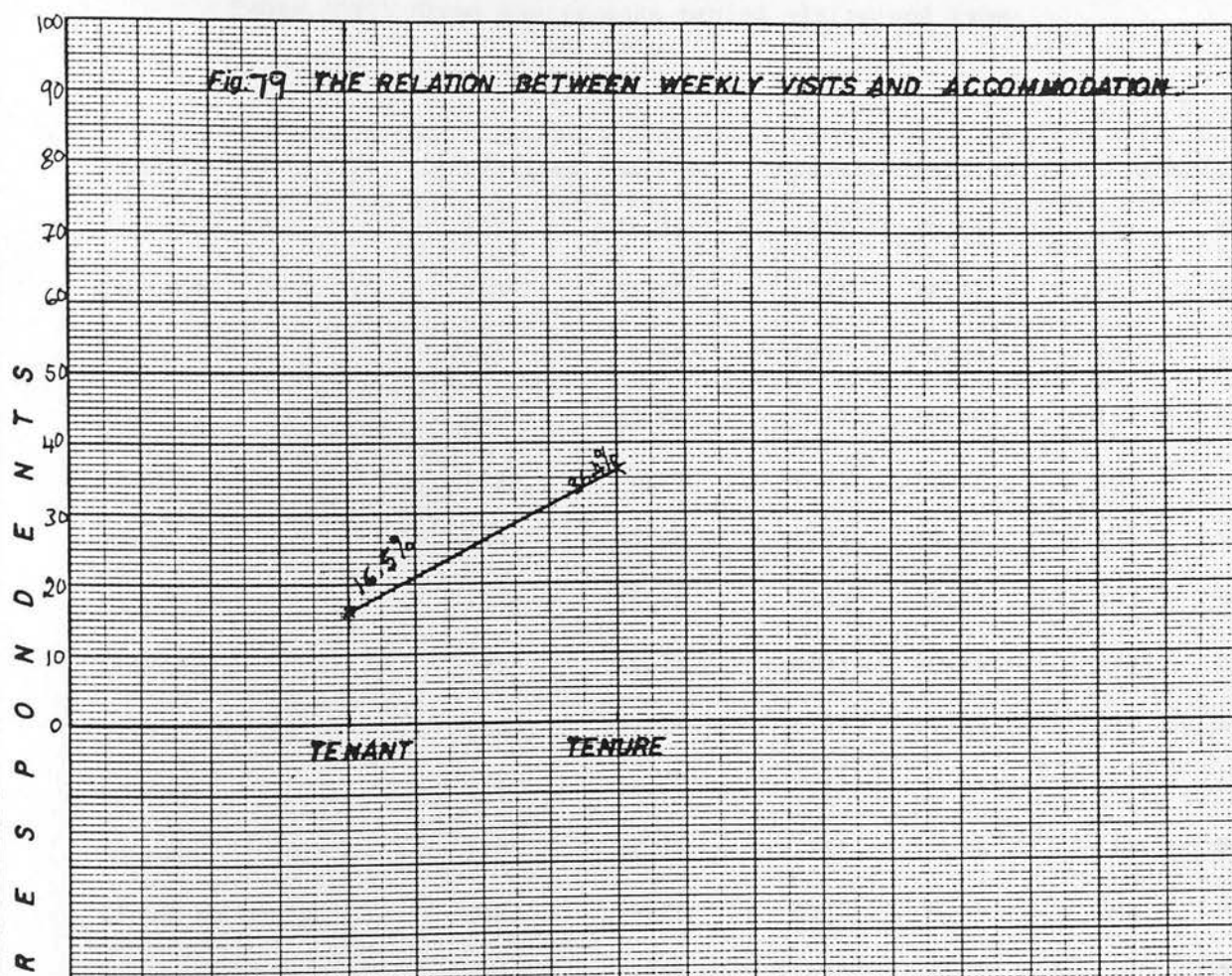


Table (59): Shows the reasons behind visits and type of family

Reasons for visits	Integrated families		Nuclear families		Bachelors	
N. ceremonies	(37)	44.0%	(50)	40.3%	(5)	41.7%
Contact	(27)	32.1%	(35)	28.2%	(3)	25.0%
Isolation	(4)	4.8%	(3)	2.4%	(2)	16.7%
Rest	(20)	23.8%	(33)	26.6%	(5)	41.7%
Have a meal	(12)	14.3%	(18)	14.5%	(0)	0.0%
Fresh air	(34)	40.5%	(49)	39.5%	(7)	58.3%
Nice scenery	(33)	39.3%	(48)	38.7%	(7)	58.3%
Secured	(9)	10.7%	(13)	10.5%	(3)	25.0%
Nice arranged	(11)	13.1%	(13)	10.5%	(2)	16.7%
Lovely	(26)	31.0%	(34)	27.4%	(5)	41.7%
Lively	(23)	27.4%	(22)	17.7%	(1)	8.3%
Close to house	(12)	14.3%	(5)	4.0%	(0)	0.0%
Nice services	(6)	7.1%	(11)	8.9%	(1)	8.3%
Relatives	(77)	91.7%	(111)	89.5%	(10)	83.3%
Socialisation	(2)	2.4%	(2)	1.6%	(0)	0.0%
Other	(22)	26.2%	(22)	17.7%	(2)	16.7%

Table (60): Shows the reasons behind visits and age-groups

Reasons for visits	Age groups							
	16 - 20		21 - 30		31 - 40		Over 40	
N. ceremonies	(2)	100.0%	(18)	48.6%	(18)	33.3%	(54)	42.5%
Contact	(2)	100.0%	(14)	37.8%	(10)	18.5%	(39)	30.7%
Isolation	(0)	0.0%	(3)	8.1%	(3)	5.6%	(3)	2.4%
Rest	(2)	100.0%	(13)	35.1%	(9)	16.7%	(34)	26.8%
For a meal	(1)	50.0%	(4)	10.8%	(5)	9.3%	(20)	15.7%
Fresh air	(2)	100.0%	(14)	37.8%	(22)	40.7%	(52)	40.9%
Nice scenery	(2)	10.0%	(16)	43.2%	(21)	38.9%	(49)	38.6%
Secured	(1)	50.0%	(7)	18.9%	(3)	5.6%	(14)	11.0%
Nicely arranged	(2)	100.0%	(4)	10.8%	(4)	7.4%	(16)	12.6%
Lovely	(2)	1.0%	(14)	37.8%	(15)	27.8%	(34)	26.8%
Lively	(1)	50.0%	(10)	27.0%	(9)	16.7%	(26)	20.5%
Close to house	(1)	50.0%	(6)	16.2%	(3)	5.6%	(7)	5.5%
Nice services	(1)	50.0%	(4)	10.8%	(1)	1.9%	(12)	9.4%
Relatives	(2)	100.0%	(32)	86.5%	(47)	87.0%	(117)	92.1%
Socialisation	(1)	50.0%	(1)	2.7%	(1)	1.9%	(1)	0.8%
Others	(1)	50.0%	(6)	16.2%	(15)	27.8%	(24)	18.9%

Table (61): Shows the frequencies of visits and educational groups

Education	Weekly visits		Monthly visits		Annual visits		No visits	
Illiterate	(8)	24.2%	(21)	63.6%	(13)	39.4%	(2)	6.1%
Religious	(3)	15.8%	(14)	73.7%	(12)	63.2%	(0)	0.0%
Adult	(0)	0.0%	(1)	100.0%	(1)	100.0%	(0)	0.0%
Primary	(12)	21.4%	(49)	87.5%	(24)	42.9%	(0)	0.0%
Intermediate	(7)	28.0%	(17)	68.0%	(13)	52.0%	(1)	4.0%
Secondary	(16)	41.0%	(26)	66.7%	(20)	51.3%	(0)	0.0%
Graduate	(16)	34.0%	(35)	74.5%	(22)	46.8%	(1)	2.1%

Table (62): Shows the reasons behind visits and educational group

Reasons	Illiterate	Religious	Adult	Primary	Inter- mediate	Second- ary	Graduate
National ceremonies	(15) 45.5%	(9) 47.4%	(1) 100.0%	(24) 42.9%	(13) 52.0%	(15) 38.5%	(15) 31.9%
Contact	(6) 18.2%	(6) 31.6%	(0) 0.0%	(18) 32.1%	(9) 36.0%	(14) 35.9%	(12) 25.5%
Isolation	(1) 3.0%	(2) 10.5%	(0) 0.0%	(1) 1.8%	(3) 12.0%	(1) 2.6%	(1) 2.1%
Rest	(1) 3.0%	(2) 10.5%	(1) 100.0%	(11) 19.6%	(12) 48.0%	(17) 43.6%	(14) 29.8%
Have a meal	(1) 3.0%	(2) 10.5%	(0) 0.0%	(5) 8.9%	(5) 20.0%	(5) 12.8%	(12) 25.5%
Fresh air	(4) 12.1%	(9) 47.4%	(1) 100.0%	(22) 39.3%	(13) 52.0%	(20) 51.3%	(21) 44.7%
Nice scenery	(7) 21.2%	(6) 31.6%	(1) 100.0%	(23) 41.1%	(13) 52.0%	(18) 46.2%	(20) 42.6%
Secured	(1) 3.0%	(0) 0.0%	(0) 0.0%	(5) 8.9%	(8) 32.0%	(7) 17.9%	(4) 8.5%
Nicely arranged	(0) 0.0%	(2) 10.5%	(0) 0.0%	(6) 10.7%	(5) 20.0%	(7) 17.9%	(6) 12.8%
Lovely	(4) 12.1%	(4) 21.1%	(0) 0.0%	(14) 25.0%	(11) 44.0%	(15) 38.5%	(17) 36.2%
Lively	(1) 3.0%	(2) 10.5%	(0) 0.0%	(10) 17.9%	(9) 36.0%	(10) 25.6%	(14) 29.8%
Close to house	(0) 0.0%	(1) 5.3%	(0) 0.0%	(2) 3.6%	(5) 20.0%	(5) 12.8%	(4) 8.5%
Nice services	(0) 0.0%	(1) 5.3%	(0) 0.0%	(4) 7.1%	(4) 16.0%	(4) 10.3%	(5) 16.6%
Relatives	(28) 84.8%	(15) 78.9%	(1) 100.0%	(53) 94.6%	(23) 92.0%	(38) 97.4%	(40) 85.1%
Socialisation	(0) 0.0%	(0) 0.0%	(0) 0.0%	(0) 0.0%	(0) 0.0%	(1) 2.6%	(3) 6.4%
Other	(3) 9.1%	(6) 31.6%	(1) 100.0%	(8) 14.3%	(4) 16.0%	(14) 35.9%	(10) 21.3%

Table (63): Shows frequencies of visits and occupation

Occupation	Weekly		Monthly		Yearly		No visits	
Housewife	(5)	29.4%	(13)	76.5%	(7)	41.2%	(0)	0.0%
Senior employee	(6)	3.0%	(13)	65.0%	(11)	55.0%	(1)	5.0%
J. employees business	(29)	34.9%	(61)	73.5%	(42)	50.6%	(1)	1.2%
Private business	(1)	14.3%	(6)	85.7%	(5)	71.4%	(0)	0.0%
Worker	(15)	19.2%	(60)	76.9%	(35)	44.9%	(2)	2.6%
Pensioner	(6)	40.0%	(10)	66.7%	(5)	33.3%	(0)	0.0%

Table (64): Shows reasons for visits and occupation

Reasons for visits	H.wife	S.employee	J.employee	P.employee	Worker	Pension
N. ceremonies	(8) 47.1%	(5) 25.0%	(37) 44.6%	(1) 14.3%	(37) 47.4%	(4) 26.7%
Contact	(7) 41.2%	(5) 25.0%	(30) 36.1%	(2) 28.6%	(19) 24.4%	(2) 13.3%
Isolation	(1) 5.9%	(0) 0.0%	(3) 3.6%	(0) 0.0%	(5) 6.4%	(0) 0.0%
Rest	(3) 17.6%	(8) 40.0%	(24) 28.9%	(3) 42.9%	(16) 20.5%	(4) 26.7%
Have a meal	(2) 11.8%	(8) 40.0%	(11) 13.3%	(1) 14.3%	(6) 7.7%	(2) 13.3%
Fresh air	(10) 58.8%	(11) 55.0%	(37) 44.6%	(3) 42.9%	(25) 32.1%	(4) 26.7%
Nice scenery	(5) 29.4%	(8) 40.0%	(37) 44.6%	(2) 28.6%	(32) 41.0%	(4) 26.7%
Secured	(2) 11.8%	(4) 20.0%	(12) 14.5%	(0) 0.0%	(6) 7.7%	(1) 6.7%
Nicely arranged	(2) 11.8%	(4) 20.0%	(12) 14.5%	(0) 0.0%	(8) 10.3%	(0) 0.0%
Lovely	(3) 17.6%	(8) 40.0%	(30) 36.1%	(0) 0.0%	(22) 28.2%	(2) 13.3%
Lively	(0) 0.0%	(7) 35.0%	(21) 25.3%	(0) 0.0%	(15) 19.2%	(3) 20.0%
Close to house	(0) 0.0%	(1) 5.0%	(10) 12.0%	(0) 0.0%	(4) 5.1%	(2) 13.3%
Nice services	(0) 0.0%	(4) 20.0%	(7) 8.4%	(1) 14.3%	(6) 7.7%	(0) 0.0%
Relatives	(14) 82.4%	(14) 70.0%	(77) 92.8%	(7) 100.0%	(71) 91.0%	(15) 100.0%
Socialisation	(0) 0.0%	(1) 5.0%	(3) 3.6%	(0) 0.0%	(0) 0.0%	(0) 0.0%
Others	(4) 23.5%	(5) 25.0%	(21) 25.3%	(1) 14.3%	(13) 16.7%	(2) 13.3%

Table (65): Shows frequencies of visits and accommodation

Accommodation	Weekly visits		Monthly visits		Annual visits		No visits	
Tenure	(47)	36.4%	(95)	73.6%	(63)	48.8%	(0)	0.0%
Tenant	(15)	16.5%	(68)	74.7%	(42)	46.2%	(4)	4.4%

Table (66): Shows reason behind visits and accommodation

Reasons for visit	Tenure		Tenant	
N. ceremonies	(51)	39.5%	(41)	45.1%
Contact	(41)	31.8%	(24)	26.4%
Isolation	(3)	2.3%	(6)	6.6%
Rest	(37)	28.7%	(21)	23.1%
Have a meal	(19)	14.7%	(11)	12.1%
Fresh air	(55)	42.6%	(35)	38.5%
Nice scenery	(48)	37.2%	(40)	44.0%
Secured	(15)	11.6%	(10)	11.0%
Nicely arranged	(13)	10.1%	(13)	14.3%
Lovely	(37)	28.7%	(28)	30.8%
Lively	(28)	21.7%	(18)	19.8%
Close to house	(13)	10.1%	(4)	4.4%
Nice services	(11)	8.5%	(7)	7.7%
Relatives	(124)	96.1%	(74)	81.3%
Socialisation	(4)	3.1%	(0)	0.0%
Others	(30)	23.3%	(16)	17.6%

Table (67): Shows the frequencies of visits and age-groups

Age-group	Weekly visits		Monthly visits		Annual visits		No visits	
16 - 20	(1)	50.0%	(2)	100.0%	(1)	50.0%	(0)	0.0%
21 - 30	(16)	43.2%	(24)	64.9%	(17)	45.9%	(0)	0.0%
31 - 40	(9)	16.7%	(44)	81.5%	(23)	42.6%	(2)	3.7%
Above 40	(36)	28.3%	(93)	73.2%	(64)	50.4%	(2)	1.6%

Table (68): Shows the relation between regional's groups and frequencies of visits to parks and social visits

Regional Groups	Weekly visits		Monthly visits		Annual visits		No visits	
1	(25)	30.1%	(65)	78.3%	(43)	51.8%	(0)	0.0%
2	(27)	33.8%	(61)	76.3%	(30)	37.5%	(0)	0.0%
3	(6)	19.4%	(24)	77.4%	(18)	58.1%	(1)	3.2%
4	(3)	12.5%	(12)	50.0%	(12)	50.0%	(3)	12.5%

Table (69): Shows the relation between length of residence and frequency of parks and social visits

Duration of residence in Khartoum (in years)	Weekly visits		Monthly visits		Annual visits		No visits	
0 - 10	(17)	25.0%	(49)	72.1%	(26)	38.2%	(2)	2.9%
11 - 20	(14)	23.3%	(46)	76.7%	(30)	50.0%	(1)	1.7%
over 20	(30)	33.0%	(68)	74.7%	(49)	53.8%	(1)	1.1%

12.4. Summary

- A profile activity sequence is a technique coined by the author which could be useful in uncovering hidden dimensions in the process of analysing behavioural data when used in typical cases. It relates the temporal and local aspects of the activity. As well as the network pattern that the sequence of the activities follows.
- It shows explicitly the part or parts of a street that is most in use. Thus what kind of neighbourhood the street might belong to, in terms of class and planning pattern, and the possibility of comparing different neighbourhoods and determining which will suit most to a given situation.
- Many direct transitions of activities between private and public parts of a street, tell us the possibility that the neighbourhood has some transparent fences. Such transitions are usually coupled with opposite one (in opposite direction), either immediately or after a while. These activities were mainly taking place at the edges of the environments, i.e., main entrance door, a corner of a house, the starting point of a semi-private area, or inside a house (fence), where there are transparent fences. People use these edges as starting point from which they can discover and view the whole scene and decide whether to join the street activities or sustain.
- There are five patterns of activities distribution in the streets of the different neighbourhoods. These patterns tell us the

degree of visual and spatial integration between the three parts of the environment (private, semi-private and public). The degree of integration depends on the micro-climate of the street, the traffic situation, the plot size and the physical pattern of the neighbourhood. These five patterns are:

1. Activities distributed similarly between the three areas (private semi-private and public). At the same time the rhythm and sequences of activities were also similarly distributed between the three areas, i.e., El Amart (first class).⁴⁴
2. Activities were mainly in the public part of the street, but with fewer ones in the semi-private. The result of this is a complete domination of activity sequences between semi-private and public parts, i.e., El Rikabia.⁴⁵
3. Activities were mainly in the semi-private areas, with some in the public areas and very few in the private area. Such situation has resulted in a clustering pattern of activity sequences, mainly between the semi-private and public areas, and few between the private and semi-private areas at intervals, especially in the morning (climatical), i.e., El Sahafa.⁴⁶

⁴⁴Fig: (68)

⁴⁵Fig: (71)

⁴⁶Fig: (69)

4. Activities were mainly in the semi-private areas, but in shifting patterns between the private and public areas. In the morning and due to heavy traffic (connecting route), activities were concentrating in the private area, but later on, and after the Friday prayers (after 2.00pm), activities will be shifted to the public areas. Thus the activity sequences patterns will mainly be between the private and semi-private areas in the morning and between the semi-private and public areas in the afternoon, i.e., El Safia.⁴⁷

5. Activities were more or less distributed between the three areas, but not as the case in (1) above. Because there is a physical barrier between the private and semi-private areas (fence), as well as the traffic constraint in the public area. However, the activity sequence pattern is mainly between the semi-private and public areas. Besides the fact that this group has many activities coinciding at the same time, due to the many interactions happening by sudden opening of the main entrances, i.e., El Gerief West.⁴⁸

- Some activities were occurring in a sequential manner in one

⁴⁷Fig: (72)

⁴⁸Appendix (37)

place (private, semi-private or public areas). If the sequential activities have been grouped according to the place or places of occurrence, we will end up with a kind of group more or less typical to the neighbourhood groupings in Chapter 2.

- Education generally improves residents' perception of parks especially for fresh air and pleasant scenery.
- Monthly and annual visits are the main frequencies of visits for the Sudanese people. The former is mainly devoted to visiting relatives and friends, the latter for attending national and religious ceremonies. However, the weekly visits are few. The three frequencies of visits are intermingling. The weekly visits could sometimes be for visiting relatives and friends, monthly visits for visits to parks as well as annual visits, with the exception of attending annual national and religious ceremonies.
- The experience an individual has of public parks is directly proportional to the degree of availability of such parks in his own town of residence. Besides other personal factors which might qualify him for such experience, i.e. interest, proximity, etc. However, this experience of knowing about public parks is not necessarily concomitant to actual visits to them.
- The number of respondents attending national and religious ceremonies is inversally proportional to the status of respondent, "lower in upper classes and higher in lowerclasses".

12.5. Conclusions

1. The existence of trees, narrow alleys, front yard, the minimisation of traffic or household density in a particular street could encourage integration and continuity of activities between the private, semi-private and public areas of the environment. At the same time it could create a balanced distribution of activity sequences between the private and semi-private areas, as well as between the semi-private and public areas.
2. The fact that different neighbourhoods patterns and population density create and generate different profiles activity sequences, different activity sequences patterns, different activity sequences in place, as well as different levels of activities coinciding in time. This in itself is a very strong support for research issues (1), (2), (3), and (7).⁴⁹
3. The state of crowding in houses (extended families), lessens the social visits to relatives and friends. Since the household is self-satisfied socially because the state of crowding due to extended family household is socially accepted.
4. Respondents' cognition about a specific built environment, (public spaces), is not necessarily a concomitant of their use of that specific built environment.

⁴⁹Chapters (6); (7); (8); (10) and (13)

5. As the level of education improves so does the Sudanese perceptions of more psychological needs, (fresh air and nice scenery).
6. The low economic status of a person decreases his or her chance of attending natural and religious ceremonies annually.
7. The three patterns of the Sudanese frequencies of visits and the reasons behind each frequency of visit suggest that park visits for psychological reasons are lacking. This could be due to the educational level or the inability of existing parks to satisfy socio-cultural demands or physical requirements.
8. Due to the very frequent social visits, (by relatives and friends), which in many cases end up with visits of two or more days, demands that spatial consideration should be given to such visits within the house.
9. Also, due to the fixed annual ceremonies, both in time and space, some physical and spatial arrangements should be considered in some central public parks in each city, to accommodate such annually recurring events.
10. The Sudanese society is a socially rather than recreationally oriented society.
11. Despite the previous finding, (social), which should be encouraged and maintained in time and place, the undergoing educational process, calls for some consideration to be given to the provision of proper urban

parks to match the needs of the population at large and the current educated population specifically due to their knowledge, world view and new sets of ideas which could be fulfilled without contradicting with the culture.

Frequencies of visits to public parks, and to relatives and friends are specialised visits. It has been found that the weekly visits are mainly to public parks. The monthly visits are to relatives' and friend's visits, and the annual visits are to attending national and religious ceremonies. However the three are intermingling, especially the weekly and monthly visits, because they are so close in time. The monthly and annual visits are religiously motivated.

The beliefs and values of the Sudanese people do have an impact on their social behaviour, e.g. monthly visits to relatives and friends.

The lack of public parks and their concomitant services and facilities in Umdorman and Tuti, has a direct impact on the residents of these areas and their tendency to pay more visits to such parks in other cities, than these cities' own residents.

The concluding remarks have shown that there is strong links between class, plot size and family type in a sense that most nuclear families live in upper classes. Also they have proved that neighbourhood density and its physical characteristics have a profound impact on the final profile activity sequence and its by products for a specific neighbourhood. Such densities (extended families) reduce social visits to relatives and friends. This triple relationship (family type, plot size and class), has its influence on the intensity of activities in adjacent streets. In the light of this and the general findings (Chapter 5), one could say that the state of crowding in a neighbourhood (extended families) compels residents' to use streets for some social, play and

psychological behaviour. This state of crowding reduces the social visits to relatives and friends, because an extended family acts as a social magnet for the rest of the family. In such cases the street will be utilised for males' entertainment and socialisation as has been mentioned before. The fact that in the four study areas,⁵⁰ and the different neighbourhoods,⁵¹ the use and functions of women's and men's yards vary greatly between them. As well as where children play, and restrictions on that, where ceremonies performed, and how do residents spend their leisure time.⁵² On top of that the conclusions presented in this chapter support the sub-problem under investigation and resolve research issue (7) as well as the conclusions from all other chapters. This in itself supports strongly the central assumption of the study, presented in Chapter 4.

⁵⁰Chapter 2

⁵¹Ibid

⁵²Chapter 5

CHAPTER 13

SEX AND AGE-GROUPS

No society anthropologists know of treats females and males in exactly the same way. There are wide cultural variations the world over regarding this matter. Even in an egalitarian society, equality of opportunity means only that everyone is of the same ability, age or sex and has the same access to resources and prestige.¹

Many societies not only differentiate into sexes, but also into age sets. All societies utilise a vocabulary of age terms just as they utilise a vocabulary of kinship terms. For instance, as we distinguish between "brother", "uncle" and "cousin", so we also differentiate "infant", "adolescent" and "adult". Age terms refer to categories based on age, or age grades. An age grade is simply a category of persons who happen to fall within a particular, culturally distinguished age range.

Age set, on the other hand, is the term used to describe a group of persons of similar age and sex who move through some or all of life's stages together. For example, all the boys of a certain age range in a particular district or an extended family (Sudanese society), might simultaneously become ceremonially initiated into "manhood". Later in life, the group as a whole might become "elders", and still later "retired elders". In a society with an age-set system, entry into the system is generally nonvoluntary and is based on the universally ascribed characteristics of sex and age.

In the Sudanese traditional Muslim society, sex and age-groups are very

¹ Ember and Ember, 1981, pp. 131

important in the daily life and the hierarchy of the society, each has its prescribed roles, duties and rights and allowed to do certain things. This chapter hopes to discuss and highlight the impact of sex and age-groups on the Sudanese built environment, positively or negatively.

The main problem

People from different cultures not only speak different languages, but in fact acquire different built environment to accommodate their diversified needs and socio-cultural behaviour. The Sudanese people are not an exception to this. So, does any attempt to change the indigenous Sudanese built environments, consciously or unconsciously, ultimately result in different socio-cultural behaviour which might have serious social and psychological problems?

Sub-problem (8)

Within the Northern Sudanese cultural groups, are there some rituals or rules that segregate and exclude people only on sex and age-group grounds, in different settings?

Research issue (8)

Do sex and age-groups (elderly and females), in the Sudanese society have any tangible contribution in the urban environments?

13.1. Introduction

Barker and Schoggen² in their studies in Midwest and Yoredale, in U.S.A, found that discrimination or limit on the participation between different groups of

²For further report on the different age groups in Midwest and Yoredale, in U.S.A, see Barker and Barker (1961, 1963), Barker and Gump (1964, Chapter 11), and Schoggen and Barker (1974a, 1974b)

people (such as lower social classes, or blacks, or females), is very well documented in various public settings. To illustrate, Barker and Schoggen report data that show systematic biases against females that affect their participation in public setting in Midwest and Yoredale. In both towns, during two survey periods, the community setting available to females, either as participants or as responsible leaders, were less extensive than those available to males, and females spent less time than males in community settings.

Participation by females was not restricted in all types of settings, however, in both towns females were over represented in setting of these types:

1. Those controlled by churches and schools.
2. Those in which setting programmes emphasised personal appearance, religion, physical health, aesthetics and nutrition.
3. Those in which talking and expressing emotion were prominent activities.

Females were under represented in setting of these types:

1. Those controlled by businesses, government and voluntary associations.
2. Those in which setting programmes emphasised professional activities and recreation.
3. Those in which physical activity was prominent.

These results, obtained from two small towns in the 1950s and 1960s, confirm

the presence of many of the biases that feminists throughout North America and Western Europe have reacted to in the 1970s: restricted access to professional work and physical-activity settings, on the one hand, and on the other, overexposure to settings that reinforce a stereotype of women as church-goers, teachers and talkative, emotional persons who are preoccupied with personal appearance and aesthetic concerns. The biases against women in Midwest and Yoredale may have been relatively small compared to rural or urban communities in other parts of the world. An unpublished survey of the settings in a Turkish town, for example, showed much greater exclusion of women from government and business settings than was found in Midwest or Yoredale. At various times in its history, Midwest did allow women to serve in a position traditionally reserved for males.³

13.2. Behavioural Analysis

13.2.1. Sex, Age-Groups and Out-Door Activities

Since sexes and age-groups are very important institutions in some societies, regarding the built environment, it is vital to study and see their contribution in the public environment in depth in Sudanese society.

This study is carried out for the full-time-study neighbourhoods only (9 neighbourhoods).⁴ It represents three types of activities (interaction between people; staying activities; and doing activities), taking place in each neighbourhood, and the sex-age-groups contributing in these activities.⁵ However, the social activity has been ignored because it is underrepresented.

³Gump, 1977

⁴Chapter 4

⁵Ibid

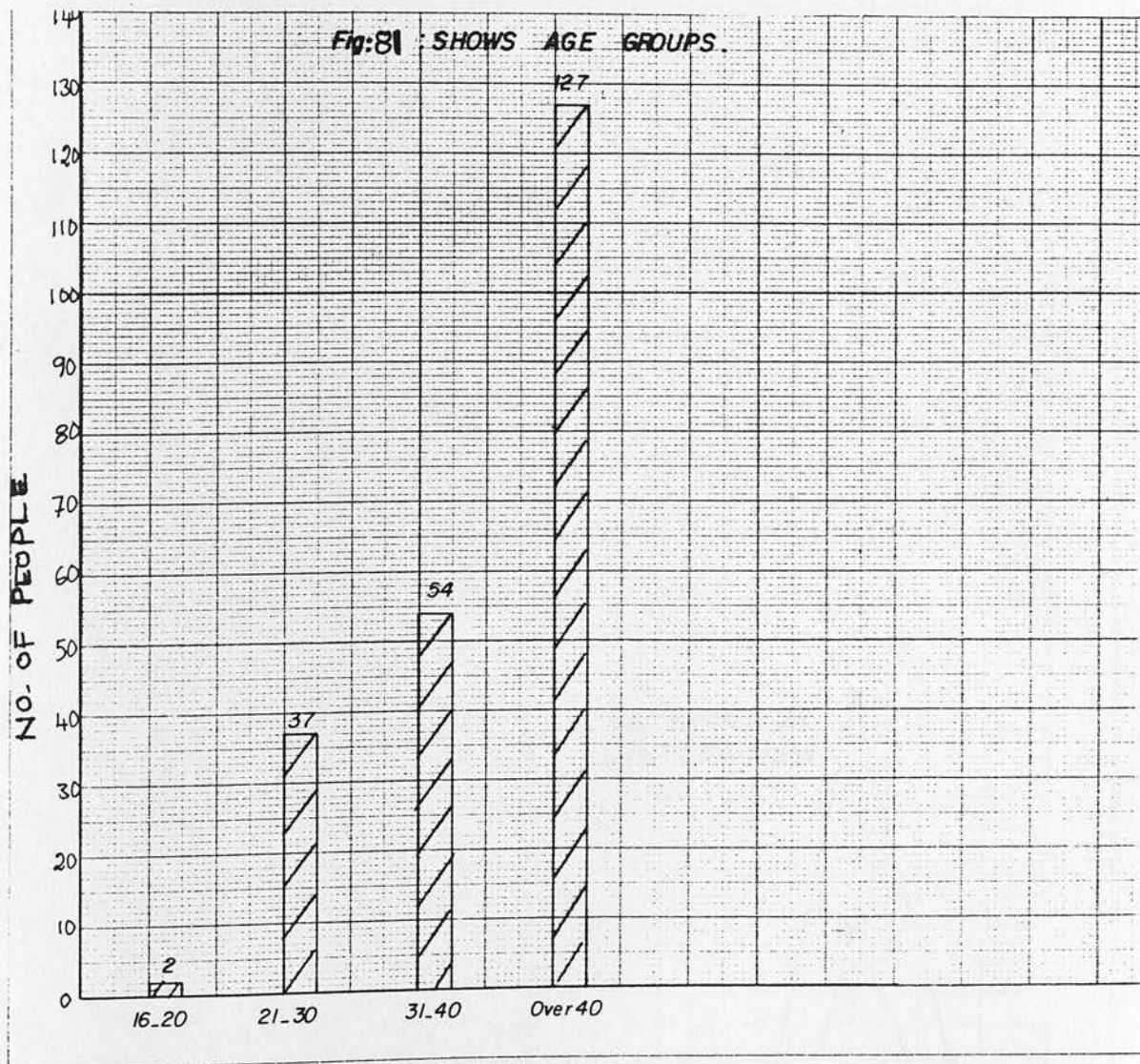


FIG. 82 THE CONTRIBUTION OF SEX, AGE GROUPS IN INTERACTION ACTIVITY.

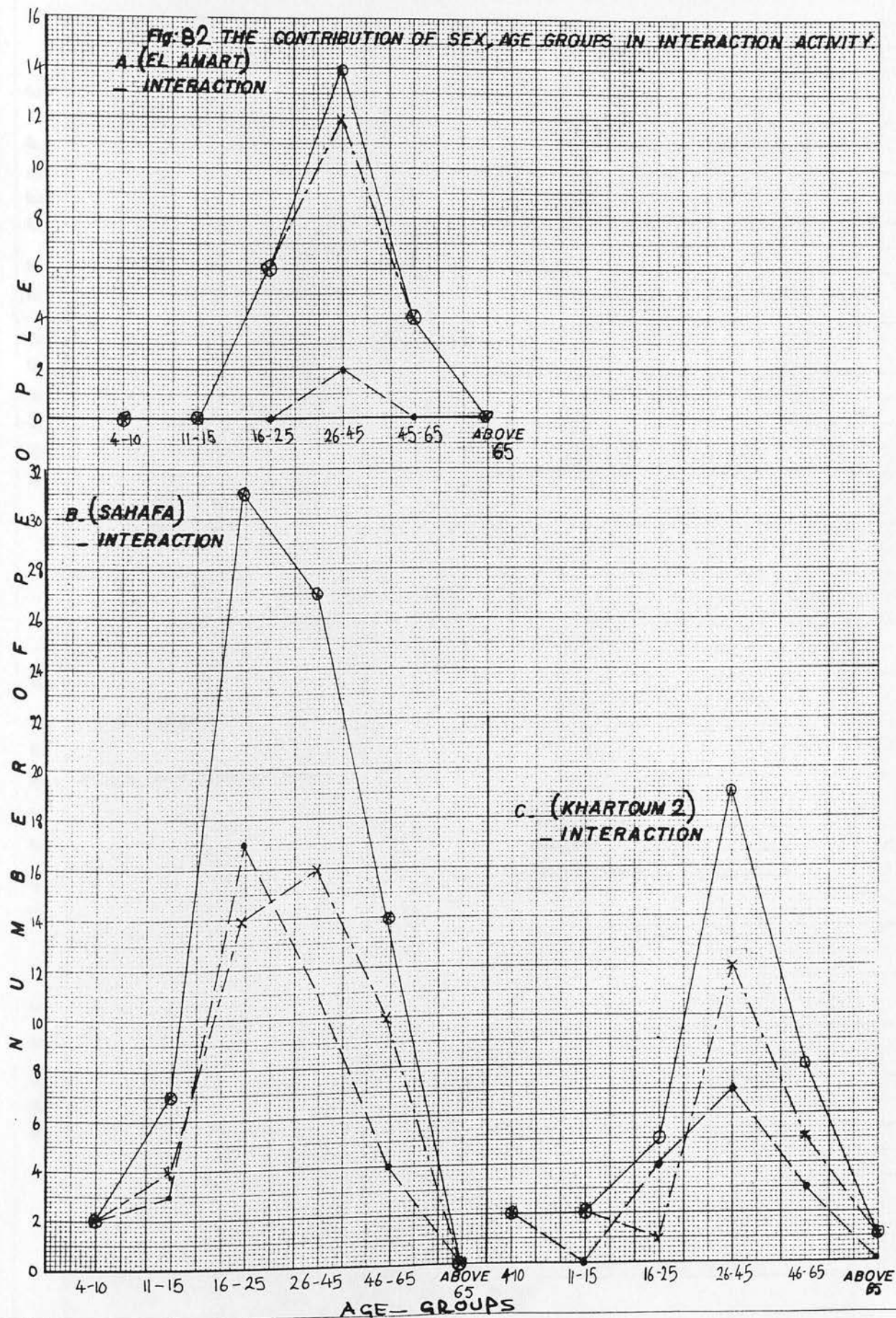


Fig.83 THE CONTRIBUTION OF SEX, AGE GROUPS IN INTERACTION ACTIVITY.

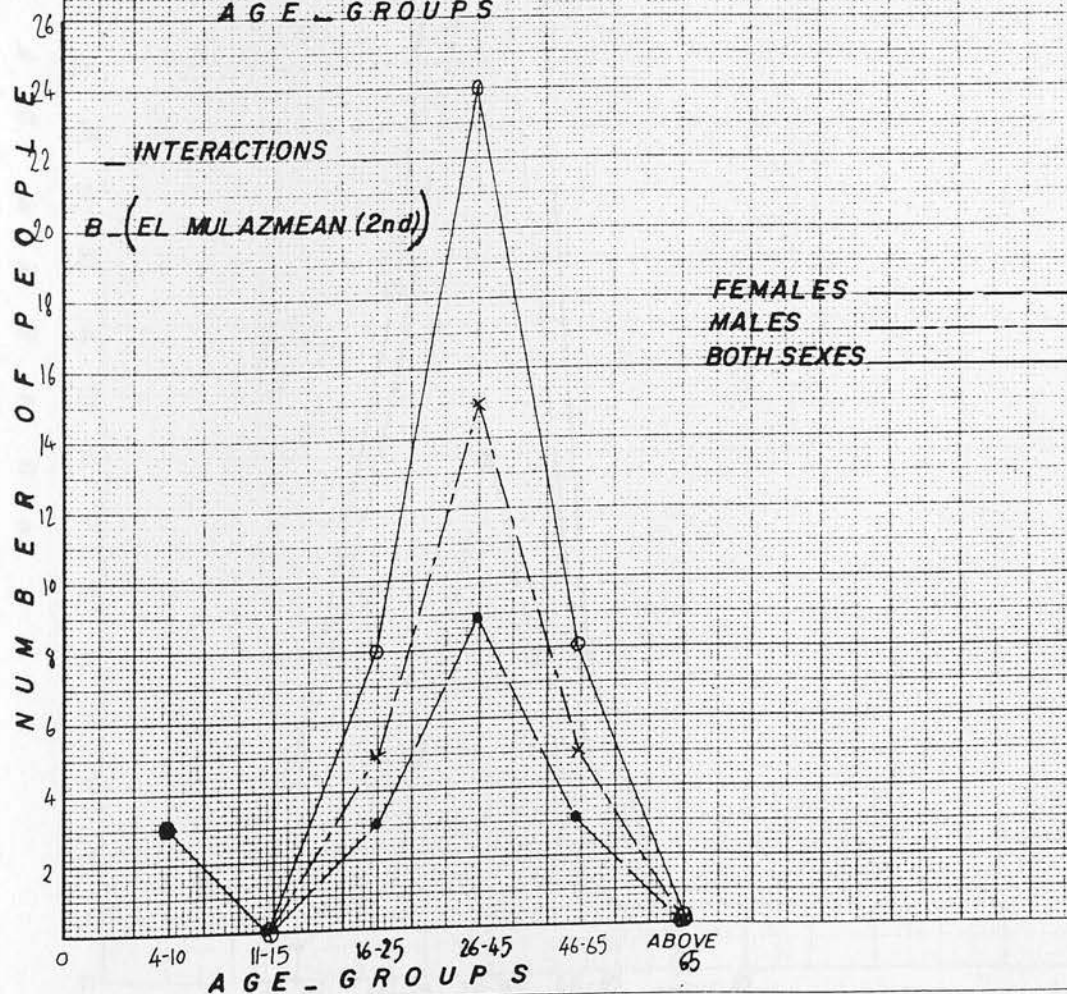
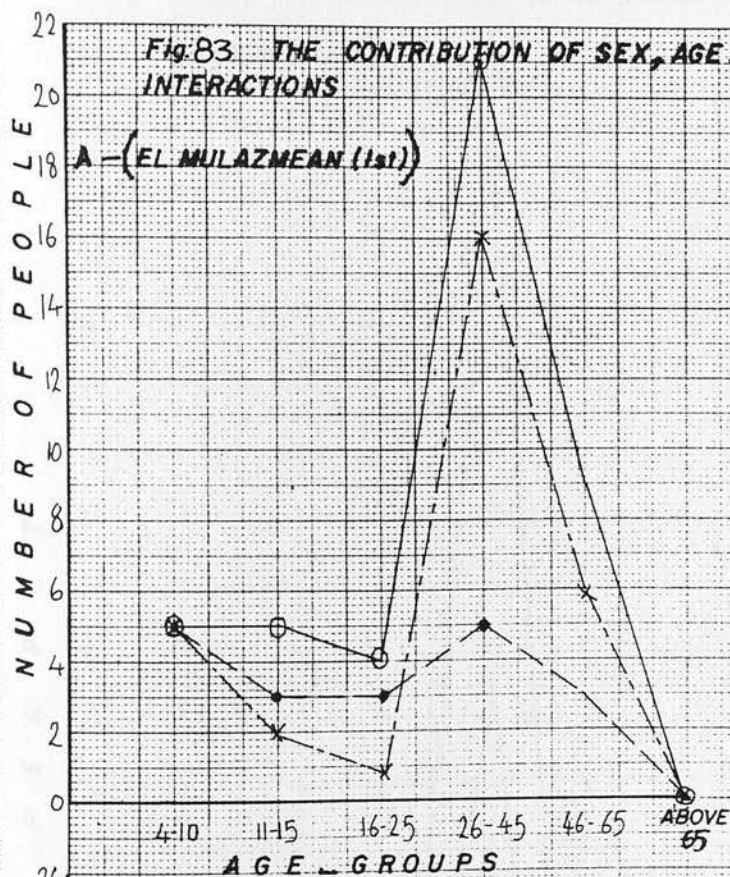


Fig:84 THE CONTRIBUTION OF SEX, AGE GROUPS IN INTERACTION ACTIVITY.

(EL RIKABIA (3rd))

INTERACTION

N U M B E R O F P E O P L E

FEMALES

MALES

BOTH SEXES

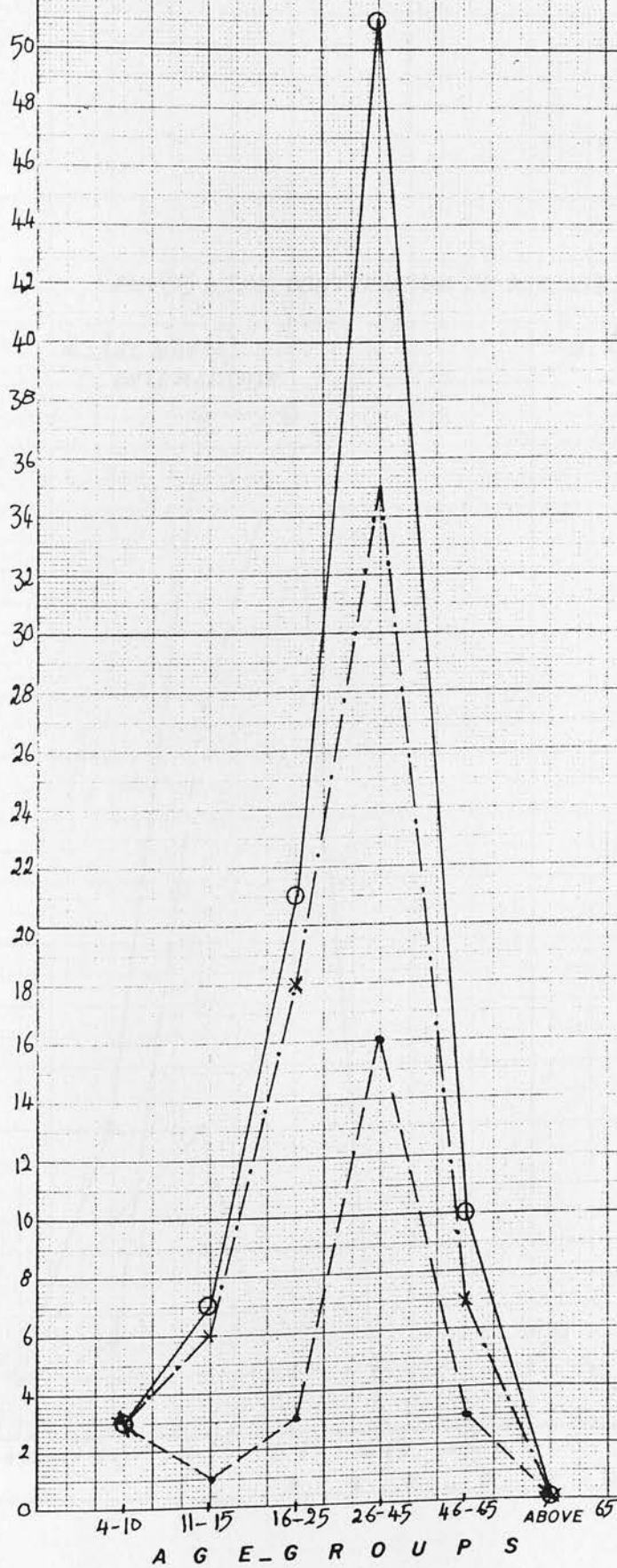


Fig:85 THE CONTRIBUTION OF SEX, AGE GROUPS IN INTERACTION ACTIVITY.

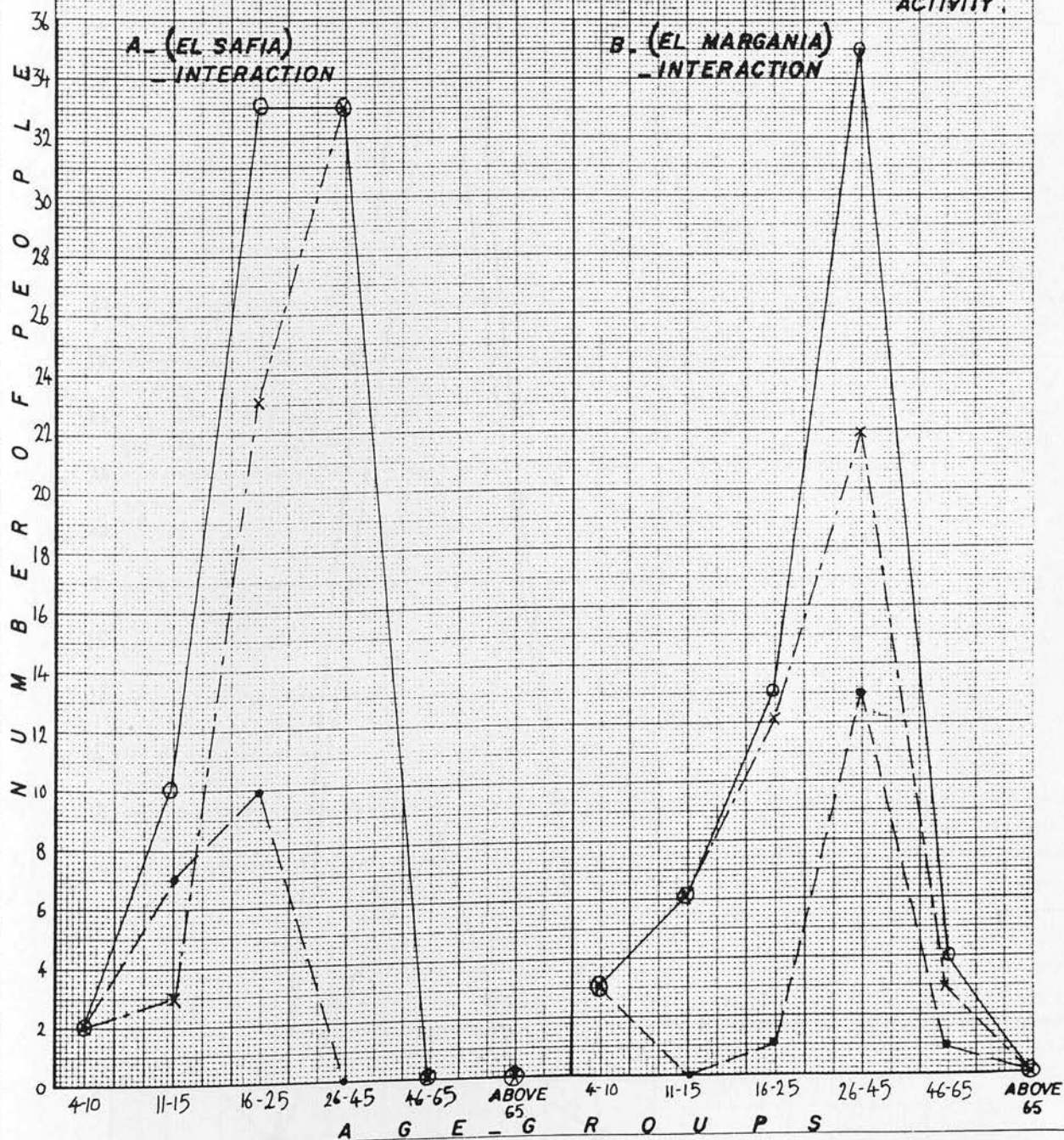


Fig:86 THE CONTRIBUTION OF SEX, AGE GROUPS IN INTERACTION ACTIVITY .

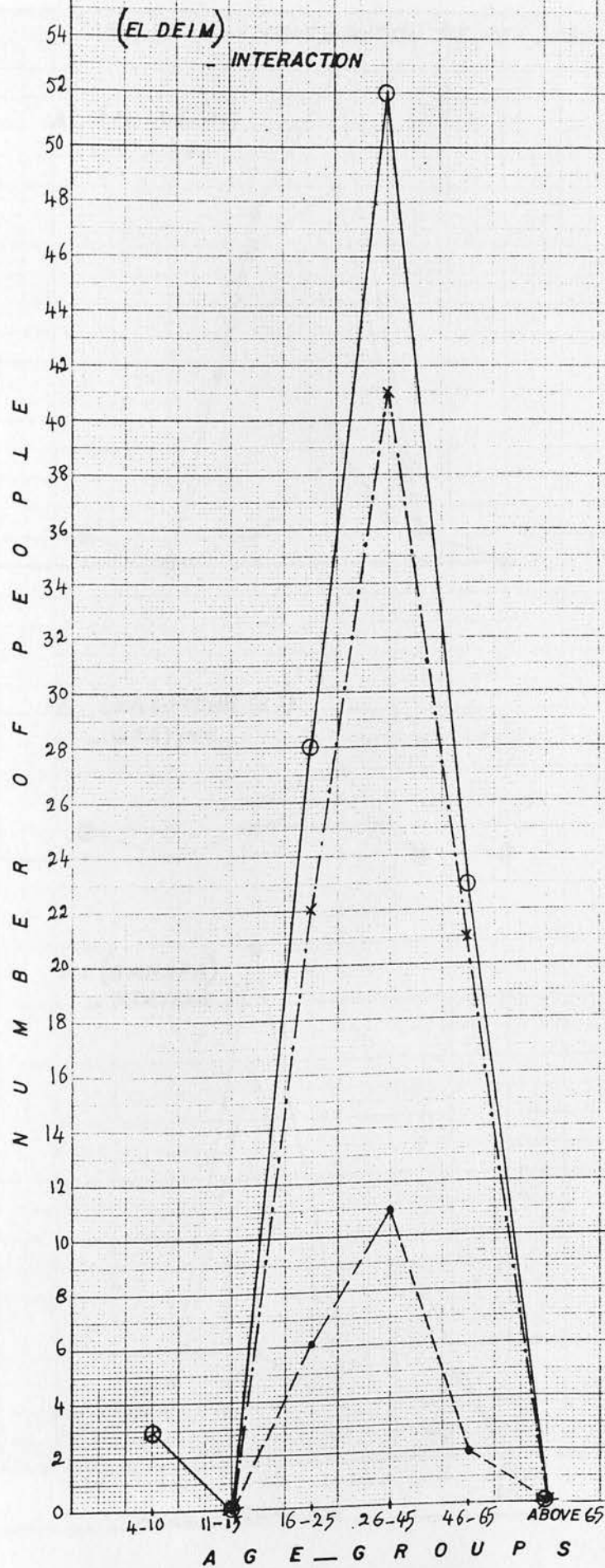


Fig:87 THE CONTRIBUTION OF SEX, AGE GROUPS IN STAYING ACTIVITIES

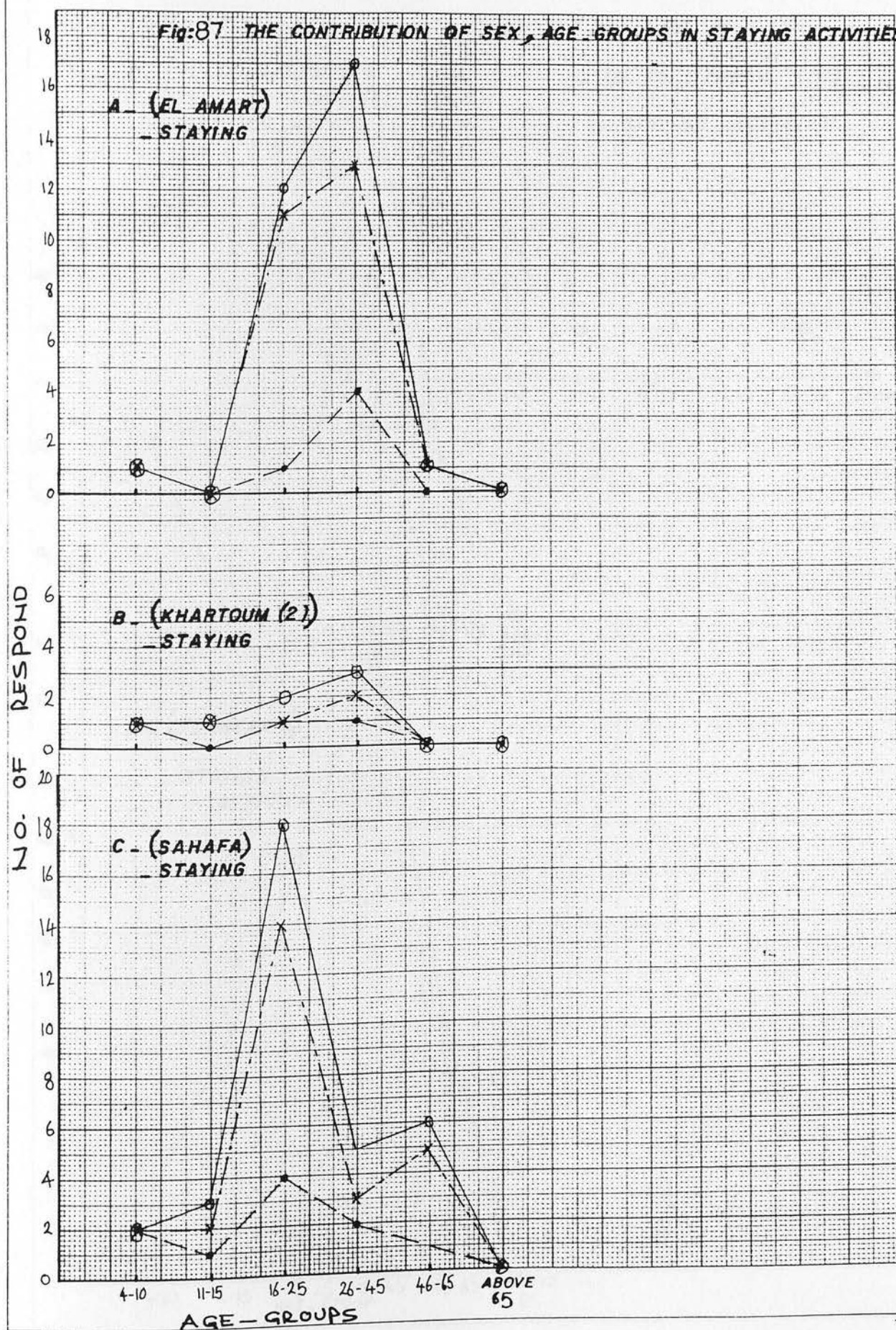


Fig: 88 THE CONTRIBUTION OF SEX, AGE GROUPS IN STAYING ACTIVITIES

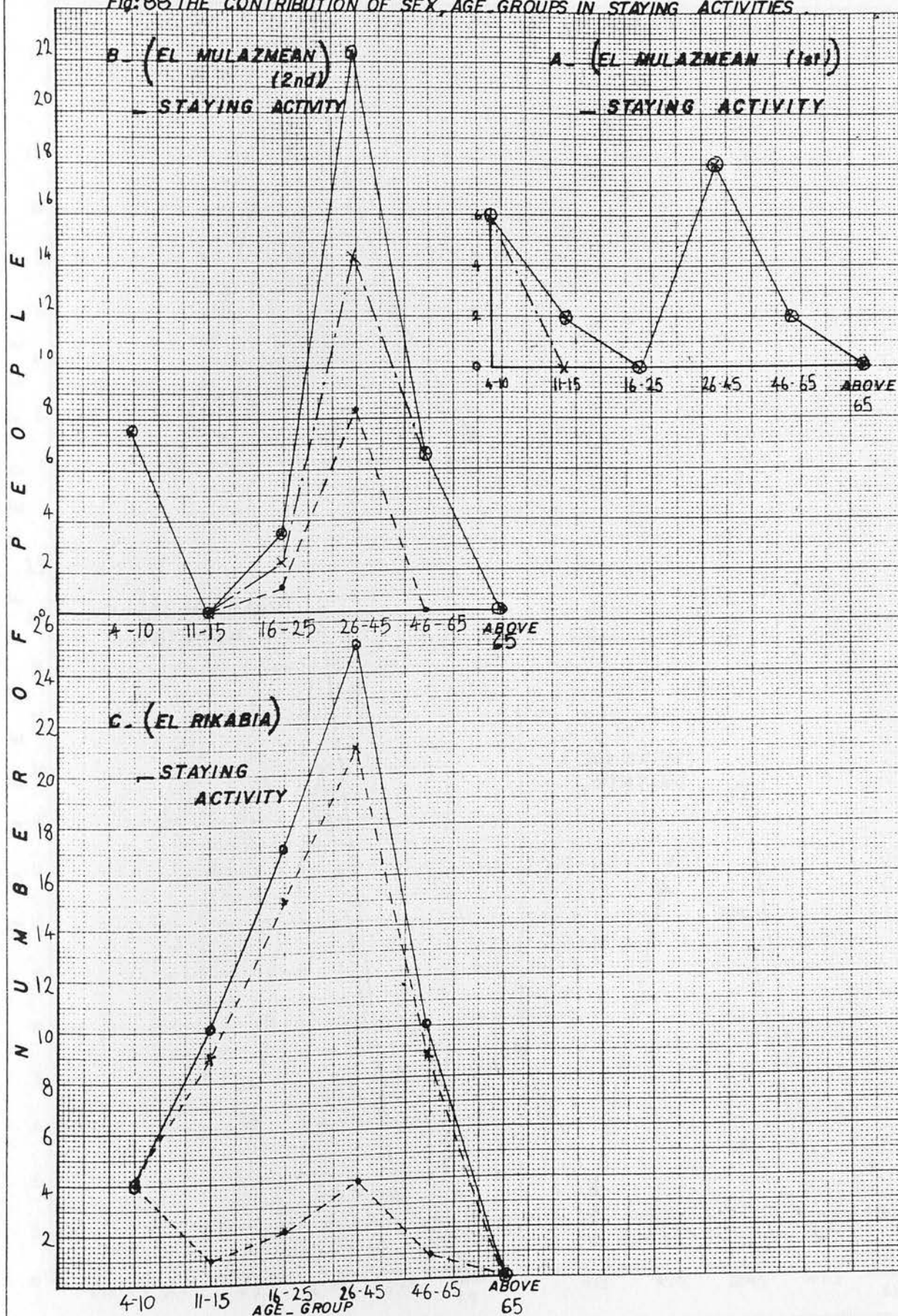


FIG. 89 THE CONTRIBUTION OF SEX, AGE GROUPS IN STAYING ACTIVITIES

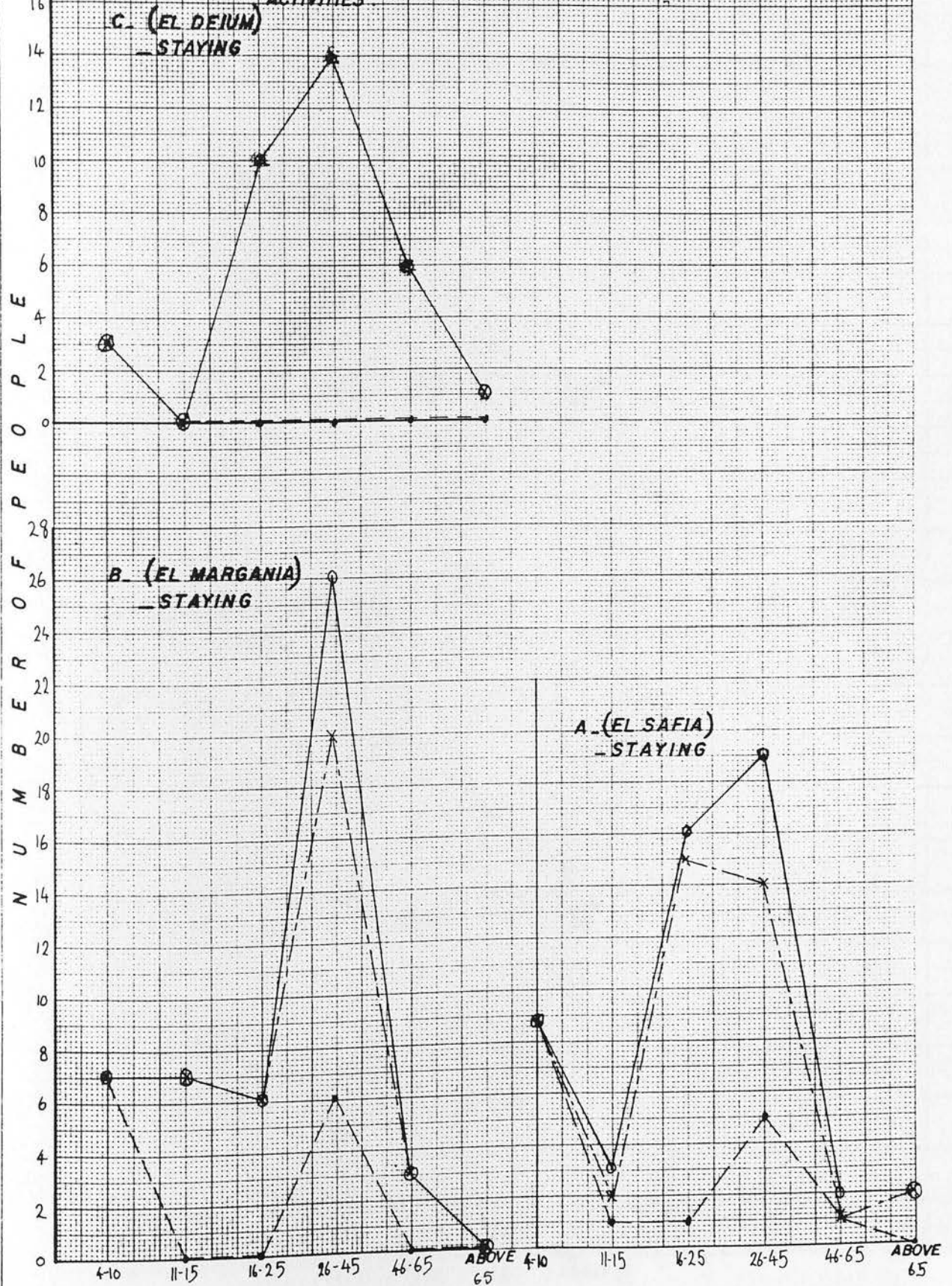


FIG. 90 THE CONTRIBUTION OF SEX, AGE GROUPS IN DOING ACTIVITY

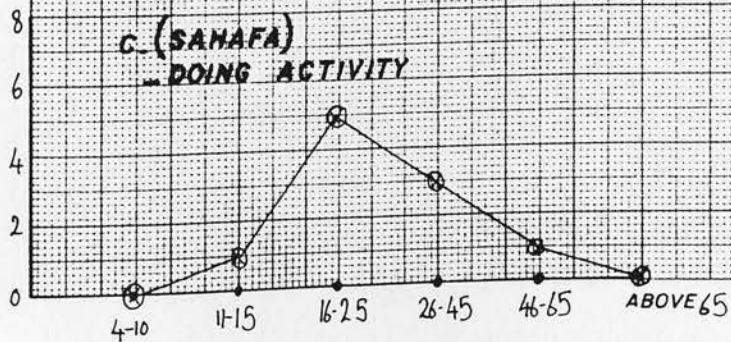
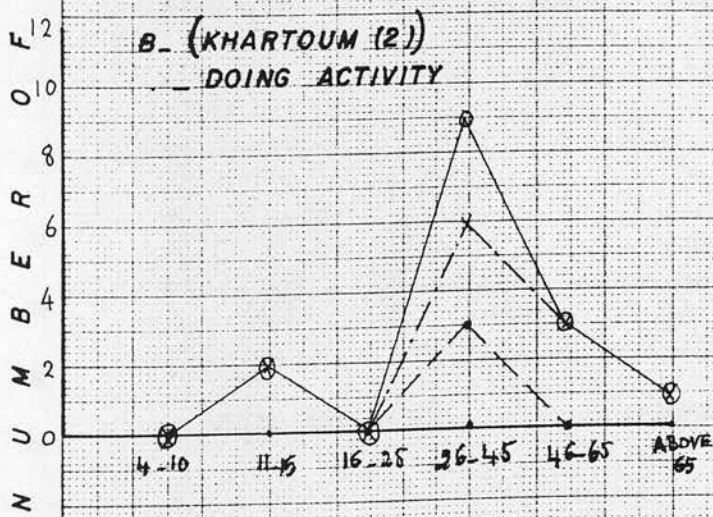
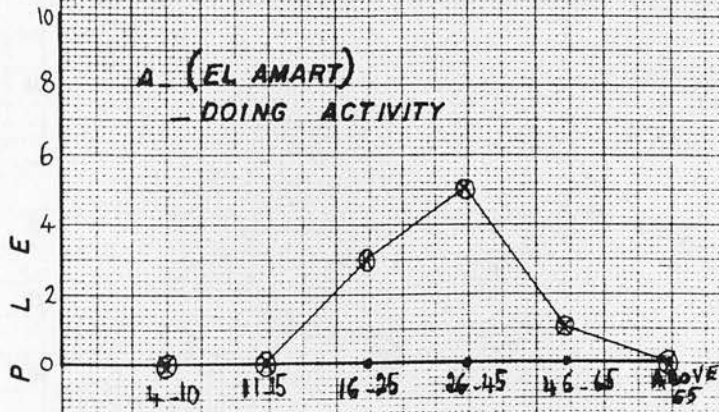
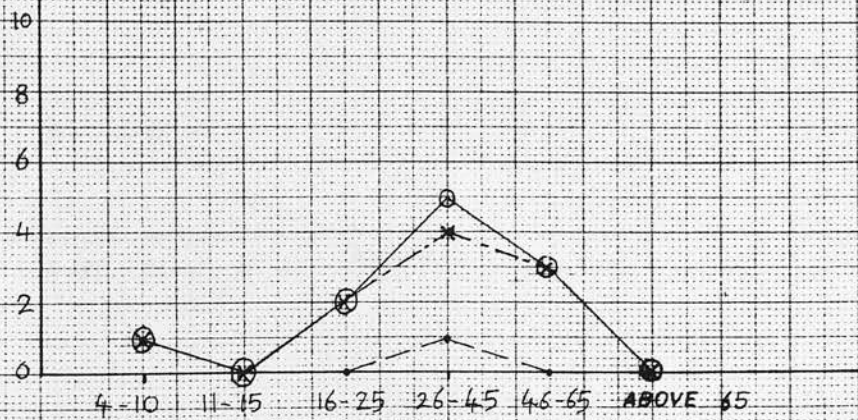


Fig. 91 THE CONTRIBUTION OF SEX, AGE GROUPS IN DOING ACTIVITY.

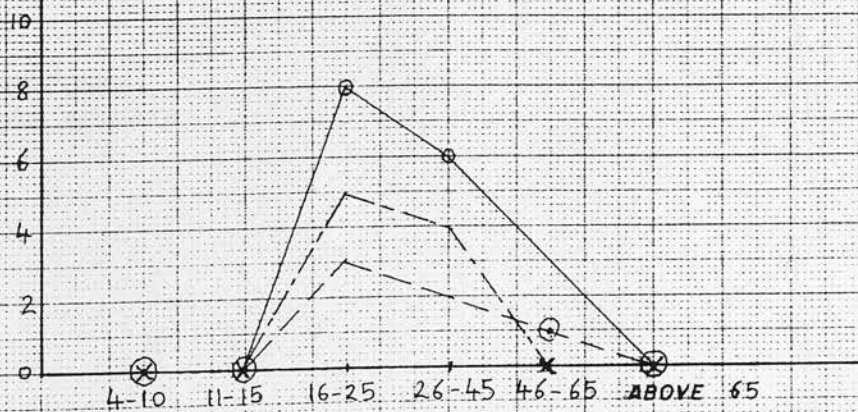
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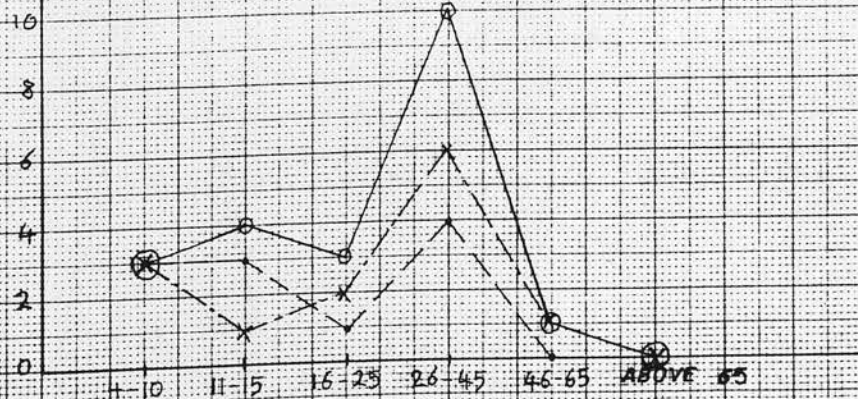
A. (EL MULAZMEAN (1st)) — DOING ACTIVITY



B. (EL MULAZMEAN (2nd)) — DOING ACTIVITY

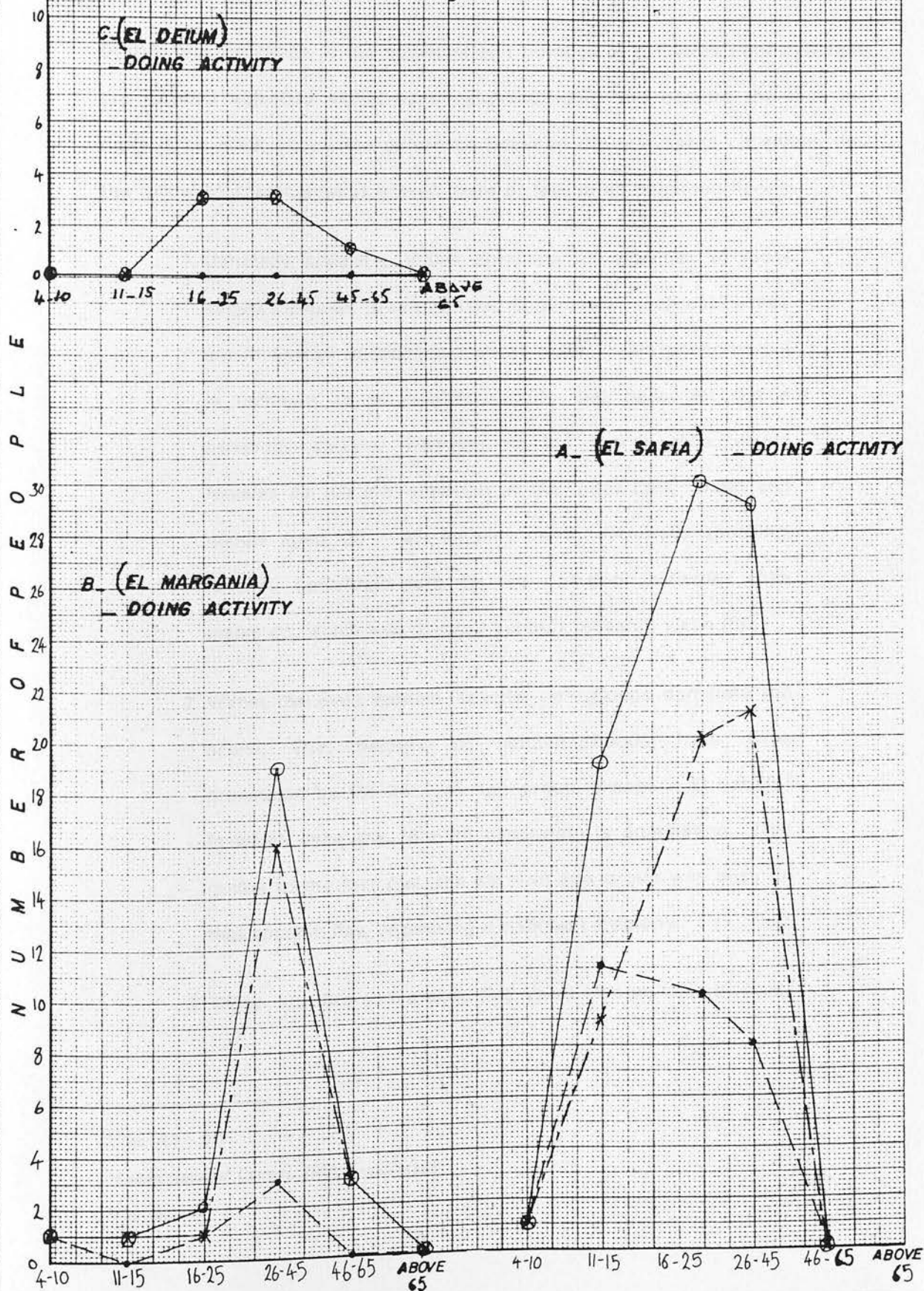


C. (EL RAKABIA) — DOING ACTIVITY



AGE - GROUPS

Fig. 92 THE CONTRIBUTION OF SEX, AGE GROUPS IN DOING ACTIVITY



Each graph represents one of these activities, the male and female age-groups taking part in it and the total of all groups in a specific neighbourhood.⁶

Despite the variations in the activities and number of residents contributing in the external activities within each neighbourhood, and despite the fact that there is no great population difference between the two sexes,⁷ it seems that, the following characteristics prevail more or less in all neighbourhoods:

1. Generally speaking, males dominate all activities in most neighbourhoods. When females dominate in such cases they are in charge of disposing waste water. This phenomenon is common in all neighbourhoods that have not got a sewerage system. However, in the former case, young females do the job, although in the latter both young and middle aged, 26 - 45, females do it. Generally speaking, females contribute less to the out-door activities than males do, which will strongly support research issue (8).
2. Within the male domain, specific age-groups dominate the scene. The majority of neighbourhoods have been dominated by the 26 - 45 age-group, except in El Sahafa.⁸ In which case, the 16 - 25 generation is dominating. That is due to the fact that, the 26 - 45 age-group was busy on that specific day, organising a naming ceremony.
3. Those who are above sixty five years of age, in both sexes

⁶Figs: (82 - 92)

⁷Sudan National Census, 1982, unpublished

⁸Fig: (82)

are few in the public environment, thus have little contribution in few neighbourhoods. The Sudanese society is a society that keeps senior citizens inside homes, in order to give them the needed services and comfort, in return for their past effort in bringing up many generations.⁹ This fact supports the current research issue, but it does not support research issue (4).¹⁰

4. Besides this, the data revealed that, in most cases, younger generations, 4 – 10 and 11 – 15, have less contribution to activities occurring in the semi-private environment, this is due to age role. This shows that the Sudanese society does value the age-groups' roles and interactions, in the sense that each age-group has a specific prescribed role or roles allocated to it, both in time and space. In most cases, younger generations should keep away from the gatherings of the older ones, and at the same time protects itself from the intrusion of the youngest ones. This is because each age-group has its own level of maturity, understanding or evolution's secrets and modes of entertainment. Each group will not allow the younger generation to unveil them, so as to keep a distance for the maintenance of respect, thus keeping the family closely intact. However, nowadays in urban areas there are some activities which mix most generations together spatially, i.e., meals and watching T.V. programmes, especially among nuclear families. In most

⁹Chapter (12)

¹⁰Chapter (9)

extended families, the division of the family along sexual and age-groups lines, is still in existence. This mere fact requires the provision of special accommodation for each sex and age-groups within the family's house.

5. The contribution of females in the streets general activities is mainly due to their contribution to the interaction activities.

6. If staying or doing activities have been recorded for females that is mainly due to either of the following:

a. Young girls 11 – 15 and 16 – 25, were disposing waste water. This doing activity generates some interactions, thus staying activities between them, which lingers in most cases for a very short time, less than two minutes.

b. In some areas, where the streets have been used as a connecting route, i.e. (*El Safia*),¹¹ middle-age women sell fruits, peanuts, vegetables and foods. This process of buying and selling in many cases generates staying activities, which could sometimes be longer.

13.3. Summary

– It is obvious that male-groups in such a conservative society dominate the outdoor activities. Apparently, within these

¹¹Fig: (89)

groups, a specific male age-group 26 - 45, is the most dominant of all.

- The disposal of waste water is the responsibility of girls of the age-group 11 - 15 in most cases. In a few other cases, and where there are no girls of similar age-group, older ones, 16 - 25, carry out the work. However, this latter age-group is the most precious, valuable and yet the more vulnerable girls' age-group in the society. As they are about the age of marriage, and have not got married yet. Until this happens, they should preferably be looked after, to preserve their chastity. However, if an intensive females' contribution is recorded in the built environment, it is mainly due to the disposal of waste water in the streets and its associated short staying activities.
- In the Sudanese environment there is little contribution of elderly people above 65 years, among both sexes. This is mainly due to social, religious and health reasons.
- The Sudanese society is a society that values sex and age groups greatly. In a sense that, each age-sex-group has a specific and prescribed role or roles allocated to it in time and space. Not only that, each age-sex-group has its own spatial needs, especially in extended family situations.
- For economic reasons, the majority of household heads in urban areas, are above 30 years, compared with that in rural areas.
- Also for the same economic reason, extended families are

diminishing drastically in urban areas and replaced by nuclear families. This nuclear family will continue to maintain strong links with the main family, whether in urban or rural areas, for socio-economic reasons (social security).

- The number of married couples increase with age in urban areas, which is not the case in rural areas.
- Although males and females more or less have equal populations, as heads of households, males are outnumbering females according to the society norms.

13.4. Conclusions

1. The 26 - 45 males age-group, is the most productive group in the society, and dominates the existing public environments. Obviously it is for that group that planners and architects try to fulfil its needs, however the current study has pointed to the fact that other groups as well should be catered for environmentally, especially the elderly and females. Since most female age-groups have little contribution to make to public activities, we could say that they are home oriented. Thus spatial consideration should be given to family activities inside the house, which will match with their social roles and teaching of Islam. However, elderly people should be given the same consideration. Also external recreational facilities should be provided for both so as to give them comfort internally and pleasure externally.

2. Although the elderly are bound to stay most of their time at

home, for social, religious and health reasons, they visit public parks annually to attend religious ceremonies.

3. From what has been mentioned before, it should be crystal clear that the Sudanese society operates along the line of two main sex-groups, as most societies do, not only that, but what is unique about it, is that each of these main groups is divided into many age-groups. Each sex-age-group has some role to play, responsibility to fulfil and rights to claim towards the society. Based on this, environmentally, each sex-age-group could have its own space, territory, and circles into which younger generations are not allowed to intrude.

4. Unfortunately, regarding the built environment, some of these groups are better off, others are worse off. Although the current existing situation will satisfy some people, that in such urban mileue, each one needs environmental considerations socially, recreationally, spatially, etc., for the welfare of the society at large. However, this explicit environmental's benefits variations between the different sex-age-groups resolves the current sub-problem, and supports strongly research issue (9), together with the relevant findings from Chapters (5); (9); (10) and (12). This conclusion in turn strongly supports the central assumption of the study stated in Chapter (4).

CHAPTER 14

DISCUSSION OF SPECIFIC FINDINGS

This chapter will deal with the discussion of the specific findings related to the various research issues. Eventually these findings will be related to specific research issues and sub-problems, then to the main problem and the research central assumption;¹ to see whether these findings will resolve the main problem and support the central assumption of the study.

In the current study, although each of the four study areas (Khartoum, Umdorman, Khartoum North and Tuti), has a distinctive physical planning pattern, similar patterns of neighbourhoods are observed among the different study areas. Despite this the outcome of the analysis at the macro-environment (towns) level supports the impact of the dominant pattern of each study area.²

The degree of interaction between neighbours was found to be strongly related to the socio-economic (tribal, regional, long occupational homogeneity), structure of the neighbourhood, thus the city as a whole. It seems that these factors, especially the tribal and regional relations are very important factors in the Sudanese urban society. Since the society values such relations very high, and individuals move from place to place to satisfy such social needs.

The total activities observed in a specific street of a neighbourhood is a function of the class of the neighbourhood, its population structure and density, car movement in that street and its climate. However it has been revealed that other features found in that street, can change the whole picture

¹See Chapters (1) and (4)

²See Chapter (6)

drastically, i.e., a grocery, a laundry, a public drinking water point, social event (ceremony), and through traffic.³ All these behaviour-settings not only attract people, but on top of that generate by-product activities, such as staying, chatting, greeting, resting, sitting, standing, buying and selling. The sum of all these activities make the street lively. This does not guarantee social interactions between neighbours in that specific neighbourhood's street. Despite this such behaviour-settings (grocery laundry, etc) are not preferable in the neighbourhood environment. Very frequently people oppose the allocation of such services in the first place, because it is thought that they destroy the neighbourhood environment by encouraging unwanted people and foreigners to come to the neighbourhood and hang around. This fact shows that although such services in western societies could be considered very vital in residential areas in creating lively neighbourhoods, thus preventing vandalism, the Sudanese consider the existence of such behaviour settings (shops, laundries, etc) a source of trouble and try to get rid of them. Such differences in perception between different cultures, shows explicitly the variation in environmental evaluation, according to socio-cultural needs and expectation. This mere fact calls for a deep cultural understanding in any policy planning and decision making in environmental matters.

One of these cultural matters in recreational settings is the question of families contributing in such public spaces. Islamically in any given situation, the two sexes must be segregated from the presence of strangers of both sexes. Not only that it has been found that many male respondents together with their families, do not prefer visiting public parks because of some misbehaviour being committed in such public areas. Duly, a large sector of society has been discouraged and driven away from public spaces. However, because of health

³See Chapter (6)

and recreational needs of individuals in urban mileues, an alternative possibility for the provision of such public spaces, should be considered. Families-only parks have been thought of as an alternative where families could enjoy their time together, without the fear of being embarrassed.

Although this situation could create a sort of discrimination against bachelors, it satisfies the needs of most respondents and keeps families socially intact, thus the whole society.

Although the urban mileue in northern Sudan is considered disastrous, especially in third class areas, due to the state of crowding in houses, lack of community open spaces (for ceremonial purposes), public parks, greenery, and lack of proper drainage systems etc., despite this appalling situation, more than 80% of residents are satisfied with their neighbourhoods to the extent that they demand amendments to their existing residential settings, rather than requiring new developments. This situation could be due to two reasons:

1. They are more realistic, and have better appreciation of the economic situation, thus being powerless to make any tangible changes.
2. New developments could mean the breaking of the existing homogeneity, the very thing they want to avoid, for socio-economic and cognitive reasons.

Such delicate issues of replanning existing residential settings, such as the case of widening indigenous alleys for the provision of electricity, water supply, etc., should be handled with care, so as not to interrupt the socio-economic and physical structures of the neighbourhood. As a consequence of the policy of imposed wider streets at the expense of residential plots many families will be forced to move to the replanned compensating lands, thus breaking the

socio-economic structure of the neighbourhood. On top of this the wider streets will destroy the cooling effect of the alleys.

Any environmental design is basically concerned with the accommodation of human activities, whether that is for public or private domain. Each of these activities has two main dimensions, the temporal and spatial aspects of the activity. The designer must be familiar with those aspects for any given culture, in order to design a successful environment, both spatially and in time. For example, he will be in a better position to allocate the activities of different sex-age-groups in place and time, in case of multiple-uses of certain behaviour-settings (schools, mosques, open spaces etc.). Lifestyle and the nature, location and timing of activities may be the most useful way of understanding the socio-cultural nature of the city and integrating approaches such as social network, activity systems, time allocations and behaviour settings. This study has shown that the Sudanese society, despite its regional variations, has a very consistent rhythm of daily activities as well as weekly, monthly, and annual visits. However, due to socio-economic variations, the place of occurrence of these activities is varying according to the context. Not only that the specialisation of each type of visit for a specific purpose plus the daily activities timing-patterns in residential areas shows explicitly the cultural conformity of the Sudanese people. However, regarding the spatial variation between the respondents, it has been revealed that those activities which form the core of the society's culture (formal), have to be accommodated in one way or another, whether that being in a street, neighbour's house, etc. Other informal activities which do not interrupt the culture could be maintained, dropped entirely or compensated with other activities. This depends largely on the possible available space and physical characteristics of the environment.

Regarding the activities, their locations and timing-patterns, of the different residential settings, the study shows that similar physical patterns could result

in similar behaviour being carried out in similar spaces at similar times. Besides the physical pattern, social homogeneity or heterogeneity could have an impact on the temporal and place of occurrence of many activities. An understanding of neighbourhoods would help prevent the indiscriminate transfer of forms and solutions among countries and cultures. An example of this, is the case of importing modern western houses in the Sudan in this century, which proved to be a complete failure spatially and functionally. Nowadays the use of high-rise apartments which are completely out of context socially, climatically and functionally has begun to invade the country.

Obviously in any reasonable society economic changes to a better standard could cause residential and physical change to match with the new situation. This situation is very noticeable among the graduates, it is coupled in most cases with rural transition. This doubled transitions from rural to urban lower class, then in a short length of time to upper class, might have a negative impact on people's knowledge and cognition of urban milieu generally. This could prepare a better breeding ground for people accepting imported ideas of environmental design. This might have a reversible effect in the near future, when the whole matter will be too late to change. However, since the human being is adaptive to limited environmental change, people adapt themselves to the new situation through time.

Besides this residential dynamism, some people due and to spatial, physical, social and personal needs undertake some changes into their existing residential settings and its surroundings. It seems clear that people desire to make changes and impress their personality on the environmental quality.⁴ Most of the changes have been at the architectural scale, they have clear

⁴Boudon, 1969.

spatial implications, particularly where there is any degree of group homogeneity. Then the many individual changes produce cultural landscapes expressing group identity containing individual variability. Clearly it is easier to get group cooperation if the group is homogeneous. There is less conflict about individual modification, which also add up to a large whole. This relates to choice, habitat selection and the ability to change and modify environment to clustering.

The ability to manipulate environments may also affect social relationships among people. Thus one finds that strong friendship and social ties are facilitated by cooperative activities involved in completing unfinished projects or even building new ones, so that these result in more social organisation and involvement (*Naffer*) than finished ones.

A sense of control, or even the belief that one has it, modifies the effects of stress and crowding. For example, in the case of small groups in isolation, the development of social relationships and behaviour, were greatly affected by the ability actively to structure the environment. People arranged chairs and beds, and structured their use of space in order to help structure their social relationship.⁵ If people cannot act on the environment and cannot rearrange it to suit the environment may act more on them, and possibly in the wrong way. By increasing choice the effects of the environment on behaviour are reduced.⁶

The fact that the Sudanese society is defensive and security conscious has a tremendous implication on its daily life and built environment. To achieve these purposes, the society has introduced many measures, these measures are:

⁵Altman and Hawthorn, 1970

⁶Proshansky et al, 1971(a)

1. Members of the society live in a close knit group where all people are relatives and ready to protect each other;
2. Spatial separation between sexes, where each sex has its own domain to practice its own activities. Within the two sexes, age-grouping system is sometime used;
3. Physical devices through the use of high solid walls opposite entrances, and entrance for each sex, small, few and high level window, narrow alleys etc;
4. Sex segregation is applied in all behaviour-settings and daily life queues;
5. The spatial and physical sequence of a house, from the main entrance to the inner women's quarter.

As has been noticed, the majority of these devices are meant to protect females and their privacy, so in any environmental consideration, the designer has to bear in mind the defensive and privacy concepts of the Sudanese society.

The introduction of the classification system in the Sudan in the beginning of this century, has interrupted the social structure of the society. The traditional Sudanese society neighbourhoods should be socially homogeneous, where people from the same clan, tribe, region, etc., live together regardless of occupation or income, share the ups and downs of life. This traditional system as has been mentioned before fills the gap of social security system as known in western countries. The new system allows people with similar income levels to live in heterogeneous neighbourhoods, where everyone shuts his door in front of his neighbour when the latter faces crises or disaster. Because they

are in the same economic situation and have no social responsibility to each other. This system will create reckless people socially, uncaring and self-centred individuals. Thus, social and economic problems will be aggravated. Based on this it is advisable to go back to the society's roots, and accommodate people in socially homogeneous and occupationally heterogeneous clusters, and give them the chance to solve their socio-economic problems and contribute in the formation of their residential environment.

People's knowledge of their city is due to movement through it, action and behaviour in it and involvement with it. Areas which are not seen and, even more importantly, not used or experienced actively, are neither known nor understood.

However, the study shows that length of residence in Khartoum area and the proximity of a region to Greater Khartoum, results in a similar perception of environmental problems and their solutions as to the original (more than 20 years), residents of Greater Khartoum. It seems that the perception of environmental problems and their solutions is not concomitant with actual visits and movement through a city, but merely happens through diffusion of information. This subjective environmental knowledge in the Sudan is working well by means of long residence in an urban area or closeness to it, regardless of more formal objective knowledge. So it could be concluded that length of residence in an urban area and closeness to that urban area are strongly linked.

Generally speaking the study shows that the majority of residents in Khartoum area are satisfied with their neighbourhoods. When breaking the community into its socio-economic groups, subtle deficiencies of the varying physical and social patterns will emerge.

This mutual relationship between residents and their living environment is

rooted in human nature,⁷ since culturally a human being is adaptive to his surrounding environment. In some specific cases this will not happen without socio-cultural consequences, as the case in Greater Khartoum. This process of adaptation could be achieved by many means, ie., the annexation of public spaces, the addition of material elements (personalisation), arrangement of the existing living environment, social importance etc.

None of the respondents' different categories and groups is satisfied with both social relation and planning pattern (physical), environments, except the second class residents. This is mainly due to the provision of medium space standards, good services and facilities in second class areas, on top of a good social relation and shared mutual needs between adjacent neighbours.

Each group or category has its own reasons for environmental satisfaction, whether it be social relation, environmental (physical), or locational.

The dissatisfaction with the physical environment shows that generally the planning patterns of Greater Khartoum are unsatisfying for the majority of the population. Finally the location reason is given mainly as a satisfactoral reason, although the majority of neighbourhoods are located at the peripheries of the cities.

The current study shows that there is a very strong link between class, plot size and family type in the Sudanese urban societies. On one hand large families (extended) live in small plot areas in third class neighbourhoods, on the other hand, small families (nuclear), live in spacious plots in upper class areas (first and second). This is due to the planning policy, which only takes the financial ability into consideration. This situation has created a state of

⁷Ember, Carol R. and Ember, Melvin, 1981

crowding in residential settings in third class neighbourhoods. The impact of which is a self-sufficient group socially, with less social visits, intensive use of adjacent street for different activities, and more recreational pursuits in public parks.

The extended family residential system must be encouraged, because it matches with the socio-cultural structure of the society and solves residential-economic problems. However, a system of plot allocation based on social justice should be introduced.

Members of Sudanese society interact more with each other than with others; they do so to achieve certain aims and this becomes possible through the sharing of norms, roles, status of members and agreement about role, status hierarchies and unwritten rules. The society is divided into sex-age-groups. Each sex-age-group has defined rights, has its own circle of interaction, its own socio-spatial needs, and its own personal secrets. The most dominant group in the built environment is the 26-45 male-age-group. Most of the females-age-groups and elderly have little contribution in the public environment. The society demands the segregation of sexes, and keeps the elderly indoors for the reason already mentioned. Because of new roles for females in the society there is an urgent need for recreational pursuits in urban areas, thus all sex-age-groups should be allowed to recreate freely within the framework of the socio-cultural norms of the society.

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CHAPTER 15

CONCLUSIONS AND RECOMMENDATIONS

15.1. Conclusions

The basic argument has been that any findings about human preferences, perception, cognition, behaviour and socio-cultural variables will, in principle, have an impact on our understanding of urban form and through that will influence the way Sudanese cities are organised and the criteria used in planning and design to supplement those now used.

In urban design the considerations relating to people and the way in which they interact with the city have tended to be neglected; when they have been considered it has rarely been based on the data and theory of man-environment studies. In addition there has been much over generalisation about "human needs" and a neglect of the specifics (socio-cultural needs) which must be understood in order to design.

If urban form is indeed an expression of culture, and urban cultural landscape, and the city is ideally a series of areas of varied cultural or sub-cultural character, then a number of design consequences follow.

The first is that it is necessary to understand the culture of the group or cultures of various groups involved and the influences on the form of their values, lifestyles, activity systems, and all the other variables that have been discussed. This will lead to major changes in planning and urban design, since these factors have not really been considered in the Sudanese context.

Secondly, if the city is composed of a series of areas of different character, cross comparisons will influence the way each is perceived and subjectively defined.

The third major point is that the design of a city for different groups with varied needs and values becomes extremely difficult. The same physical elements may be seen in completely contradictory ways by different groups with different preferences and cognitions.

Clearly the goal is conflict resolution at the urban scale. This seems to imply homogeneity at one scale and heterogeneity at another with 'neutral' areas elsewhere. This is a major issue requiring attention. It is easier to describe abstractly but extremely difficult to fulfil in practice.

Another design problem concerns the dynamic rather than static nature of population. On one hand if a population shifts occurs city areas may be occupied by different groups. Too tight a fit would not work and could be counter productive. On the other hand, given groups change in their culture, values and way of life. These two factors, make the design process very difficult.

In the current study, all residents belong to one main culture group, with sub-regional cultures in some minor issues. The approach suggested is to house people on grounds of social (clannish, tribal or regional), homogeneity. This approach has been supported strongly by the findings that people are remaining with their existing residential settings for principally reasons of social relation satisfaction.

The fact that this study mainly deals with a northern Sudanese culture and its implications on its built environment, does not mean that other distinctive cultures, such as the southern Sudanese cultures, should be ignored and neglected. On the contrary, typical studies must be conducted in the future to guarantee a fair chance to other minorities.

Environmental design, therefore, should consider the shape, nature and extent

of social networks and avoid disrupting them and altering social relations. This is clearly related to the definition of neighbourhood as a socio-spatial schema. Urban neighbourhoods can then be related to lifestyle, so that different sub-cultures and sex-age-groups will have a fair consideration in the city.

From the study of the four study areas, and their physical differences, it is possible to see some of the ways children's play and play patterns are influenced by the setting in which they live. Neighbourhoods themselves are artifacts of the adult world, largely built around grown-up needs. Children are obliged to find ways of "fitting in" – adapting to the environment that they happen to live in. In many respects only their energy, imagination, and perseverance make it possible for them to define an acceptable play environment.

Many cultures world-wide think of themselves as child-oriented and particularly sensitive to the needs of children. The Sudanese are no exception. However, the findings suggest that when it comes to the built environment, children's needs are largely unrecognised and unmet or disregarded. It is not necessarily desirable to plan neighbourhoods around the needs of any single group of people. However, we must understand that since neighbourhoods play such an important role in children's daily lives, they demand special attention. As a matter of policy and planning practice, we should be no less responsive to children's needs just because they are so flexible or so well equipped to "make do".

What should concern us is that the constraints of the neighbourhood environment can deprive children of a basic right of childhood – the right to experience and explore the world around them safely, spontaneously, and on their own terms.

What has been said about children's needs, could be said about other

sex-age-groups, namely the elderly and female groups. The findings show that they have very minor considerations in the urban milieu for recreation pursuit. In any future environmental developments they should be given tangible consideration, so as to allow them to contribute in the public scene and be part of the society within the permissible cultural norms.

Most of the current existing situations are seen to be unsatisfactory socially and physically (planning). However in such situations, some of the people, over time, should be likely to attempt to reduce their dissatisfaction by one of the following means:

1. Revising needs through moving into another cycle stage.
2. Altering conditions in the present dwelling via remodelling.
3. Moving to another more congruent residential situation.
4. Shifting their activities to the semi-private and public part of the street.

Obviously the second and third options are constrained by lack of purchasing power for the low-income household groups, (80% of the total population).

The results have shown that certain types of people (in third class areas and low income, tenants, extended families, some occupation and education groups, and those with short length of residence), consistently evidence dissatisfaction for their residential context due to different needs, aspirations and inability to alter their context.

Assuming that increasing residential satisfaction is a primary goal of housing, several implications can be drawn from the findings. First, the various elements of residential satisfaction (physical, social relation and locational), appear highly interrelated. This suggests that, to be most effective, housing

policies should have the potential of simultaneously influencing all these dimensions in a favourable way. Concentrating on, for instance, improving the dwellings physical quality alone may have little impact on overall residential satisfaction or even dwelling quality satisfaction itself if surrounding neighbourhood conditions continue to erode.

Second, the importance of perceived social ties and friendliness of neighbours in generating neighbourhood satisfaction implies that rehabilitation as opposed to large-scale renewal and displacement is likely to generate a more satisfying residential environment. Such an approach is likely to be less destructive of valued neighbourhood social relationships and to maximise opportunities for matching built environment and social needs.

Third, the higher satisfaction related to social homogeneity suggests that explicitly heterogeneity policies may prove dissatisfying to people. This conclusion must be interpreted with great caution for the reason that the majority of the northern Sudanese belongs to a main Muslim culture. This main culture could be divided to sub-cultures based on regional grounds. Thus, what is meant by homogeneity here, is regional homogeneity.

Out of this discussion, a portrait of time allocation among urban residents begins to emerge. First a framework for dealing with the temporal and spatial patterns of individuals on a daily basis has been suggested. This framework places interactions over space and time within a systems framework where individuals are conceived of as being in continual interaction with a perceived environment.

Second, the possibilities of differentiating among life styles through analysis of activity data by employing variable individuals' characteristics, (i.e. sex, family type, physical patterns, class, education, occupation, length of residence in urban areas, type of accommodation, etc), was high. Thus there will be vast

differences in the amount of discretionary time available to individuals as a function of the constraints placed upon them. This fact indicates the cultural homogeneity of people.

The various aspects discussed seem to interact, to reinforce one another and also suggest many interesting interrelationships, of which examples have been given in this thesis.

There is no attempt to suggest that this approach is "better". Rather, the intention is that different approaches together, and the variety of "answers" obtained, will give a fuller understanding of the city. A more effective specification of requirements can lead to better environmental designs by enabling the designed elements to coincide to the greatest extent possible with how they are perceived, understood, evaluated and used. The question is basically how to obtain the highest degree of congruence possible (or the least degree of incongruence) between physical setting and human requirements. The ideal being traditional environments where congruence is at a maximum. In this enterprise new methods and insights, as well as old should be used in a delicate balance – the more we "triangulate" the more will be revealed. Thus much of what is said here is supplementary to other methods rather than a replacement for them.

15.2. Recommendations

One of the main objectives of this study is the recommendation of design guidelines for the northern Sudan. These recommendations can be summarised in the following:

1. Family size must be one of the main criteria in allocating housing plot sizes to different types of families. This will enable families to conform with cultural requirements, ie.,

sex segregation within a household, in the form of separate yards and quarters. This in turn will encourage the performance of daily activities and duties for each sex without resorting to the public side of the environment.

2. Well integrated open spaces with clusters of houses, in a neighbourhood context should be provided. Residents should have a feeling of belonging, so as to be able to protect, maintain and utilise them. These community spaces accommodate the mass ceremonial activities, neighbourhood community activities, recreation and entertainment activities. Within these spaces provision for the elderly and female groups must be considered. This could be in the form of separate spaces within the main open space, or by allocation of times for each group.
3. A delicate balance must be struck between imported design ideas (*Modern*), and the indigenous ones. This will lead to the emergence of better solutions that satisfy the modern ambitions of people yet are congruent with their socio-cultural, economic, environmental, and climatical needs.
4. In replanning the infrastructures of existing indigenous neighbourhoods the following features must be observed.
 - a. The social homogeneity of the neighbourhood.
 - b. The cooling effect of the narrow alleys.
 - c. The physical characteristics of the houses, ie., the high level and small windows, and neighbours'

opposite entrances. This will guarantee cool rooms at day and conform with privacy requirements.

d. The sky-line of the neighbourhood for privacy reasons.

e. Pedestrians access and integrated open spaces, so as to keep a low profile for the involvement of the car in neighbourhoods so as not to interrupt the social life and activities of residents.

5. Although the Northern Sudan has a culturally homogeneous society, some minor regional variations can be anticipated. These regional variations are informal cultural things, thus have no implications on the built environment.

Based on these subtle divisions, it is advisable to house people in regional, tribal, clannish, etc., homogeneity within neighbourhoods. This will guarantee a heterogeneous neighbourhood economically. This combination of homogeneity and heterogeneity structure will match with social and Islamic equality needs. This in turn will furnish residents with a mutual socio-economic-spatial need. Architecturally this could be in the form of a mixture of low and high income groups.

6. Because of the congested urban environment, and working conditions within it, recreation pursuit is becoming a vital necessity for all urban residents, including women and the elderly. Consequently well planned and managed public

parks must be provided in any new urban developments, with all sex-age-groups in mind.

7. The school of architecture must turn to the rich Sudanese culture to match the social needs with the physical built environments.
8. Due to the trend of continuous immigrants influx to the capital hunting jobs, and the consequences of that on housing and the urban environment in general, a fair regional planning policy and distribution of resources must be implemented across the Sudanese regions. This will create new job opportunities in the different regions, thus allowing people to work in their regions and lessen the pressure on greater Khartoum.

Appendices

APPENDIX 1

OBSERVER'S NAME: OBSERVATION SHEET 'DIARY'
 TOWN: NEIGHBOURHOOD: STREET: AREA CLASS: DATE:

[illegible]

ASPECTS OF STREET ACTIVITIES

[illegible]

APPENDIX 3

A - DIARY SUMMARY TABLE

TOWN:

NEIGH:

NO.	ACTIVITIES	PLACE OF OCCURRENCE			PERSONS PARTICIPATING										NO. OF EACH ACTIVITY	
		Private	Semi-Private	Public	4-10 M&F	11-15 M	11-15 F	16-25 M	16-25 F	26-45 M	26-45 F	46-65 M	46-65 F	Over 65 M	Over 65 F	
1	INTERACTIONS															
2	STAYING															
3	DOING															
4	SOCIAL															
5	TOTAL ACTIVITIES															
6	TOTAL PERSONS															

No. of Houses =
No. of Households =

SUMMARY TABLE

B - ASPECTS OF STREET ACTIVITIES

NO.	TYPE OF ACTIVITY	NO. OF ACTIVITIES
1	ARRIVALS AND DEPARTURES 'ADULTS'	
2	PEOPLE GOING FROM ONE HOUSE TO ANOTHER	
3	PEDESTRIANS WALKING THROUGH STUDY AREA	
4	PEOPLE ON JOB	
5	CHILDREN PLAYING WITH EACH OTHER	
6	ARRIVALS AND DEPARTURES MADE BY CAR	
7	MOTORCYCLES PASSING	
8	BICYCLES PASSING	
9	CARS PASSING	
10	PEOPLE SHOPPING	

QUESTIONNAIRE FORMAT

1 Town:

Khartoum
 Umdorman
 Khartoum North
 Tuti Island

2 Neighbourhood:

Buri
 El Amarat
 Khartoum (2)
 El Heila El Gadeeda
 Falat
 El Sahafa
 Gerief West
 El Sika Hadeed
 El Mulazmean 1st
 El Mulazmean 2nd
 El Rikabia

El Thorah
 Umbadah
 El Moradah
 Beit El Mal
 El Safia
 El Margania
 Deium Bahari
 Shambat
 El Dangala
 Heilet Hamad
 Tuti Island

3 Class of Neighbourhood:

First Class
 Second Class
 Third Class

4 What is your religion?

Islam
 Christianity
 Others

5 Sex:

Male
 Female

6 State your original background:

Khartoum Region
 Mid Region
 Northern Region
 Kordofan Region
 Darfur Region
 Eastern Region
 Southern Region
 Other Countries

7 State your education:

Illiterate
 Religious education

Adult Education
Primary Education
Intermediate Education
Secondary Education
Graduate and Post Graduate

8 What is your age?

16 - 20 years
21 - 30 years
31 - 40 years
over 40 years

9 What is the structure of your household?

Extended family
Nuclear family
Bachelors

10 What is your occupation?

Housewife
Senior employee
Junior employee and small business owner
Businessman
Worker
Retired

11 What type of accommodation do you have?

Tenure accommodation
Tenant accommodation

12 How long was your residency in Greater Khartoum?

0 - 10 years
11 - 20 years
over 20 years

13 Where were you living before?

Khartoum area
Mid Region
Northern Region
Kordofan Region
Darfur Region
Eastern Region
Southern Region
Other Countries

14 Has your house got a women's (back) yard?

Yes
No

15 For what purposes do you use your women's yard?

Enjoy scenery
 Quietness
 Safe
 My own property
 Privacy
 Sex segregation
 Weather (out-door sleeping)
 Domestic use (cooking, etc.)
 Others (i.e. for servants)

- 16 If you have got men's yard (front), for what purposes do you use it?

See what goes on in the street
 See people
 For guests and visitors
 Weather (out-door sleeping)
 Everyone does it
 There is no where else
 Sex segregation
 Others (i.e. children play and ceremonies)

- 17 Where do your children play?

In women's yard or shared yard
 In men's yard
 In neighbour's house
 In the street
 In close open spaces
 In far open spaces and social clubs
 In others (family's house in other places)

- 18 What kind of restriction do you place on children play areas?

Accident restrictions
 Social restrictions
 Others (i.e. study, noise etc.)
 No restrictions

- 19 Do you know of any public space around?

There is a public space
 There is no public space
 Have no idea

- 20 Where do you hold your family's ceremonies?

In the house
 In the neighbour's house
 In the street
 In the near open spaces
 In social clubs
 Others (i.e. in the village or family house)

- 21 Then why?

We have got spacious house (plot)

We have not got spacious house
 Narrow streets
 For social reasons
 Others (i.e. member of a social club etc)

22 If you hold such ceremonies in social clubs or parks, then why?

Lively places
 Close to house
 Spacious
 Secured
 Nicely arranged
 Lovely
 Has nice services
 Climatically comfortable
 Others (i.e. convenience, economic, etc)

23 Where do you spend your leisure time?

At home (reading, T.V., work, relax)
 In recreation (in parks, socialising, entertainment)
 Others (i.e. in mosque, extra work)

24 How frequent do you make visits (to park or social)?

Once or more a week
 Once or more a month
 Once or more a year
 No visits

25 State for what reason or reasons do you make such visits?

For national ceremonies	Nicely arranged places
For contact	Lovely
For isolation	Lively
For rest	Close to house
To have a meal	Nice services
For fresh air	To visit relatives
For nice scenery	For socialisation
For security	Others

26 Are you satisfied or dissatisfied with the existing neighbourhood?

Satisfied
 Dissatisfied

27 Then why?

For social relation reasons
 For planning (pattern) reasons
 For locational reasons (distances to main centres)
 Others

28 What is your opinion about misbehaviour in public spaces?

You accept that

You do not accept that
You do not bother
Others

- 29 What kind of behaviour do you like to see in public places?

Accepted social behaviour
Religious behaviour
Accepted entertainment
Others

- 30 Then why this kind of behaviour?

For social reasons
For religious reasons
For recreational reasons
Others

- 31 Does the existing residential setting affect behaviour?

Yes
No

- 32 What kind of behaviour will be affected due to this?

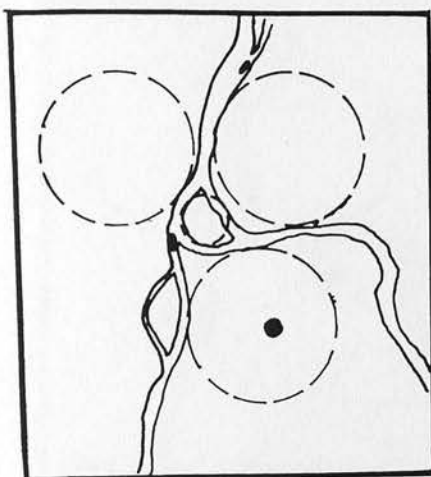
Social behaviour
Religious behaviour
Doing behaviour
Play behaviour
Others

- 33 What are your future residential setting expectations?

New residential settings
Amendment to the existing settings
Others

- 34 What are your future recreational settings expectations?

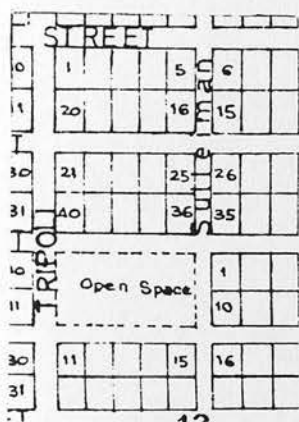
Recreational areas for each age-group
Close recreational areas to home
Family only parks
Others



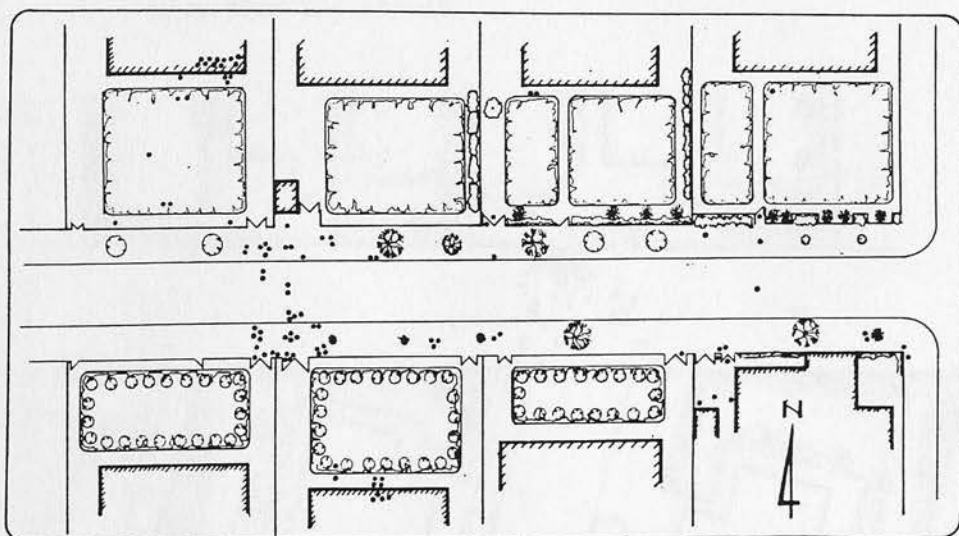
Location Plan



View from the street



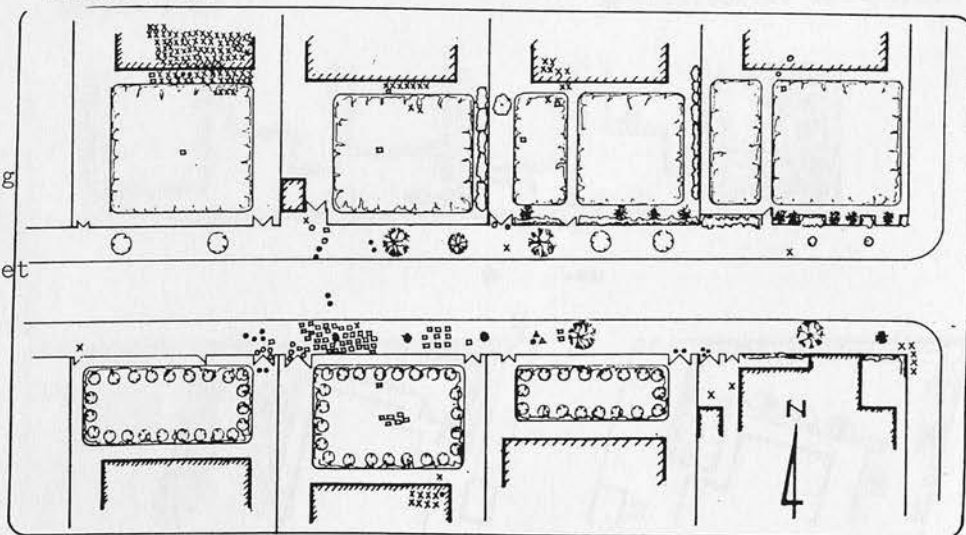
Area Plan



Street Plan

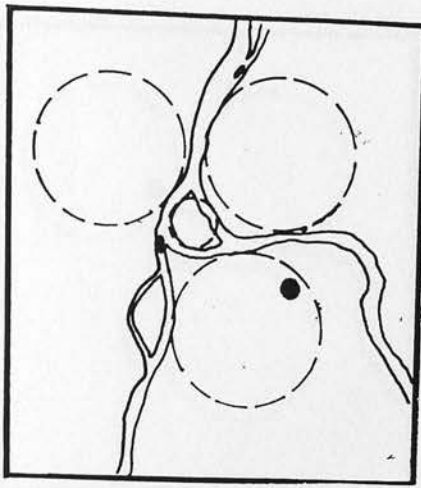
● Position of one person

- Adult standing
- Adult sitting
- x Adult doing something
- △ Child sitting
- ▲ Child playing
- That across the street

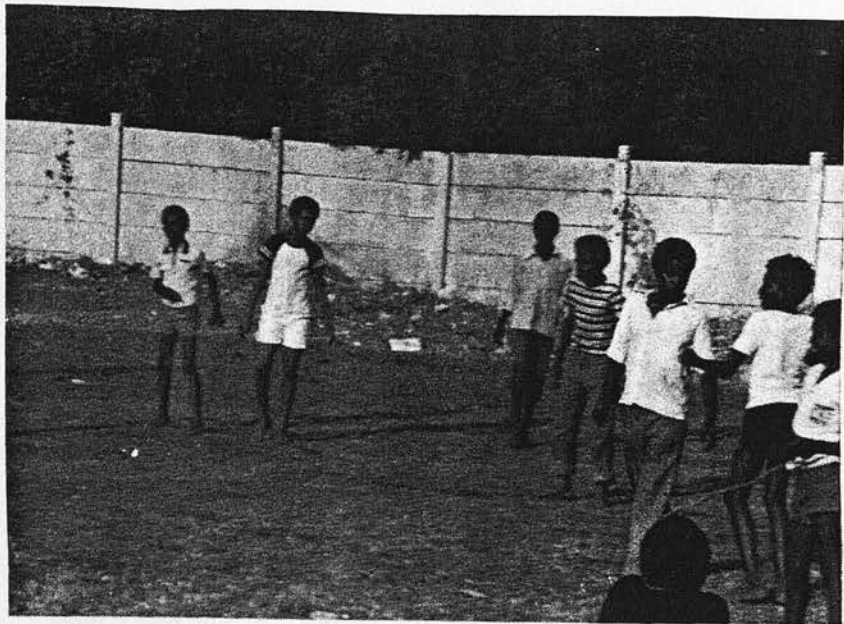


Street Plan

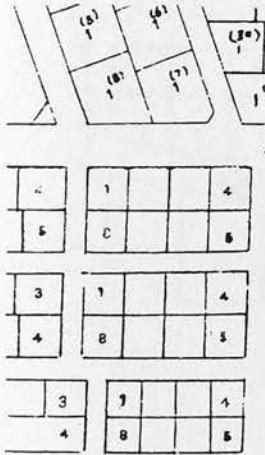
Has been planned in the sixties for high income groups. Nowadays many foreigners are living there. Although it has got many trees, few activities were taking place in the public part.



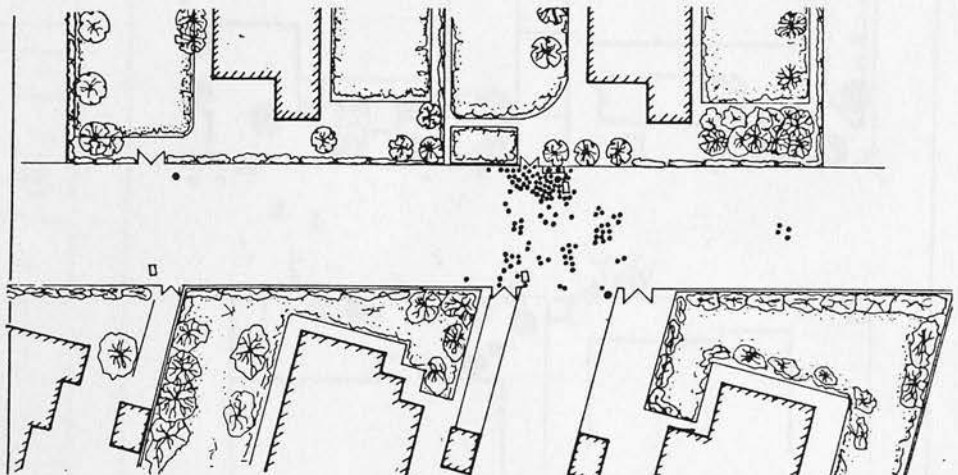
Location Plan



View from the street



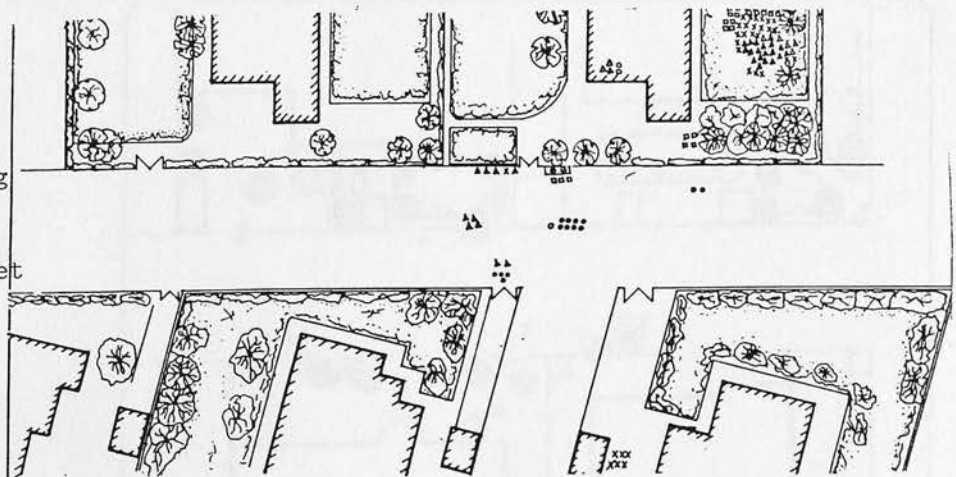
Area Plan



Street Plan

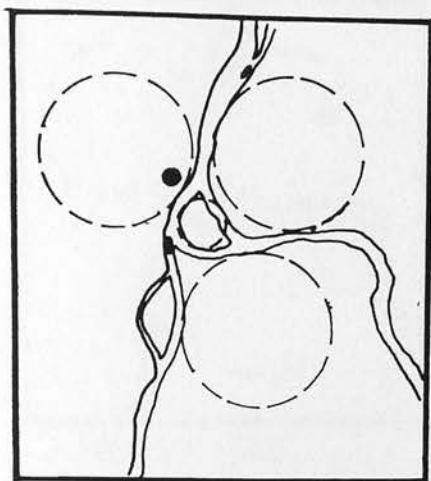
● Position of one person

- Adult standing
- Adult sitting
- X Adult doing something
- △ Child sitting
- ▲ Child playing
- Chat across the street



Street Plan

Spacious houses were allocated for the academic staff of Khartoum University. Children were playing football in the street.



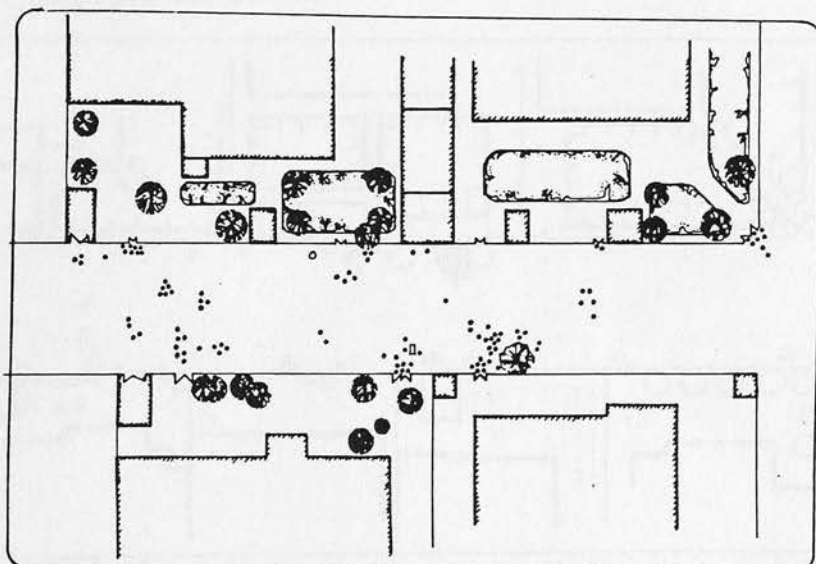
Location Plan



View from the street



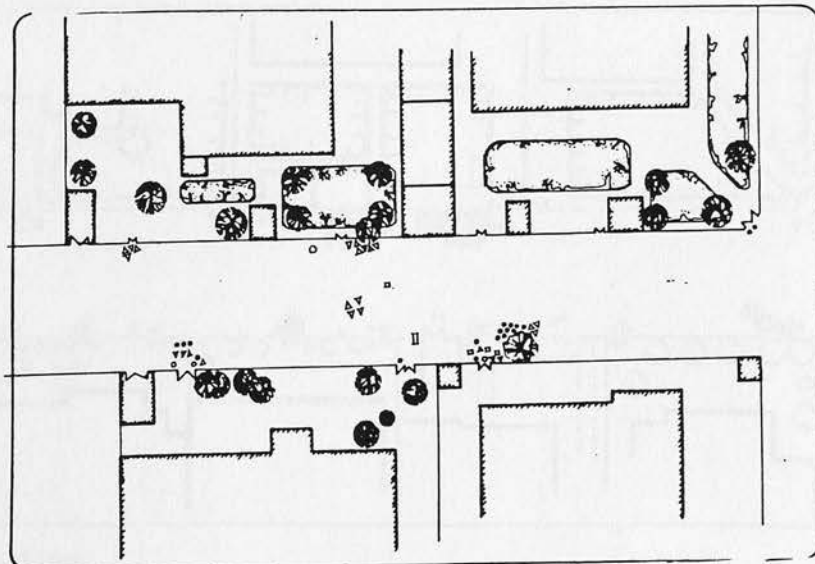
Area Plan



Street Plan

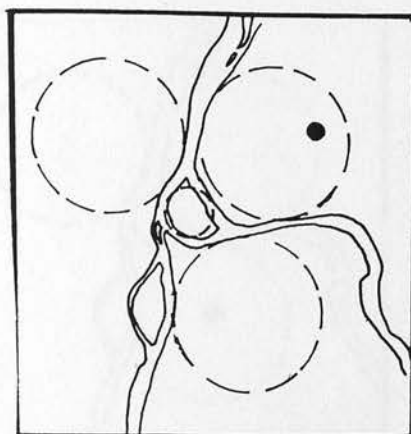
● Position of one person

- Adult standing
- Adult sitting
- X Adult doing something
- △ Child sitting
- ▲ Child playing
- Chat across the street

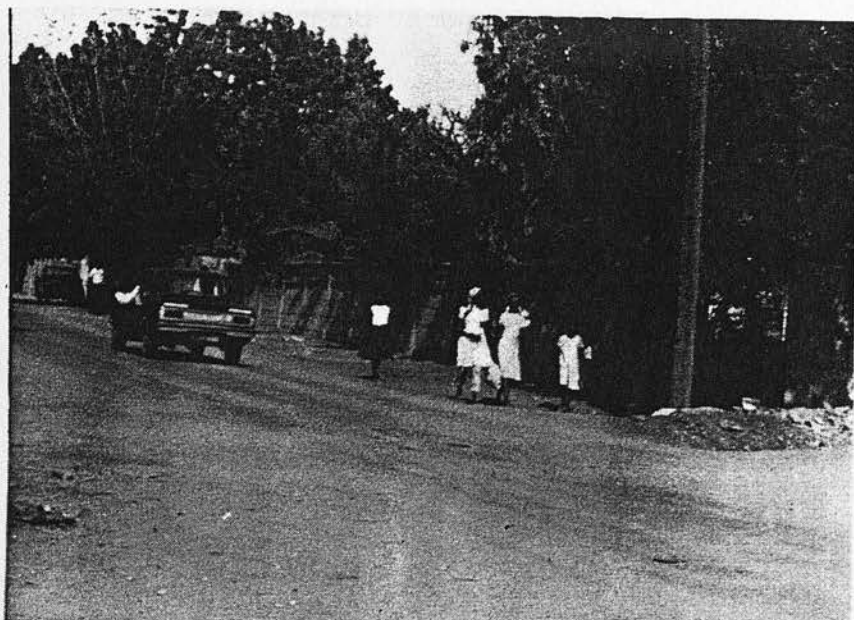


Street Plan

It has got the highest spatial standard in Khartoum area (1800 square metres).



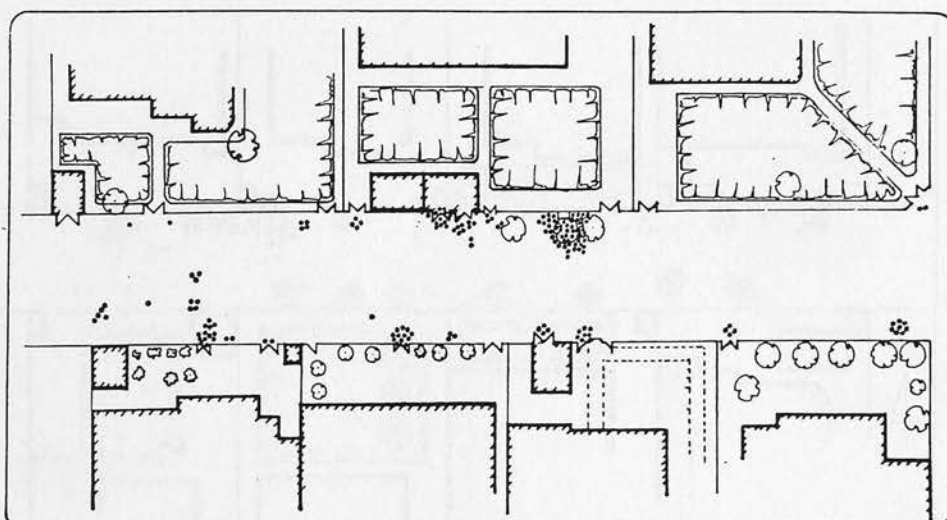
Location Plan



View from the street

BK-38				
126	127	131		
O.S.	136	132		
147		149	152	
G.R.		157	153	
168	169	176	174	
Boy G. School	Girls G. School	179	175	
180	184	195	194	
203	205	204	202	
225		221	205	
O.S.		230	229	
241	249	246	245	
204	250	215	231	
271	273	276	265	
260	284	229	221	

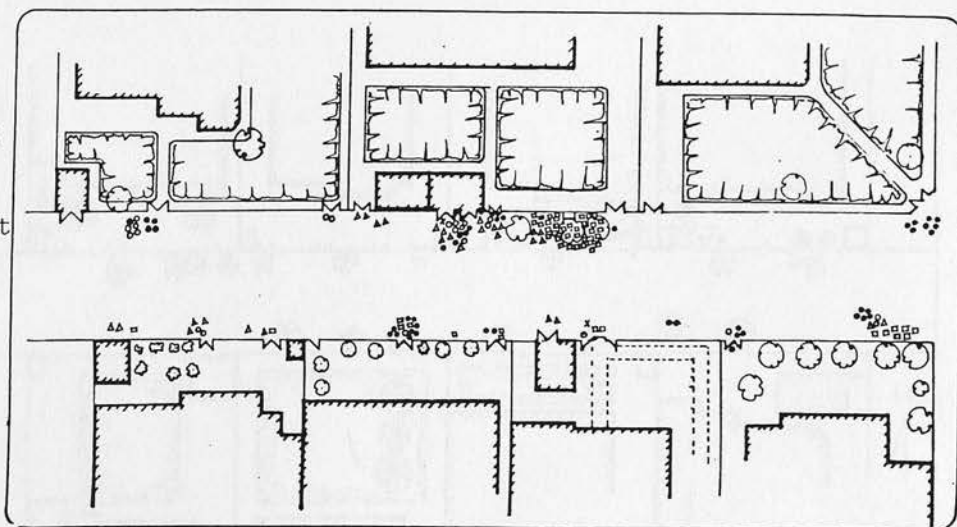
Area Plan



Street Plan

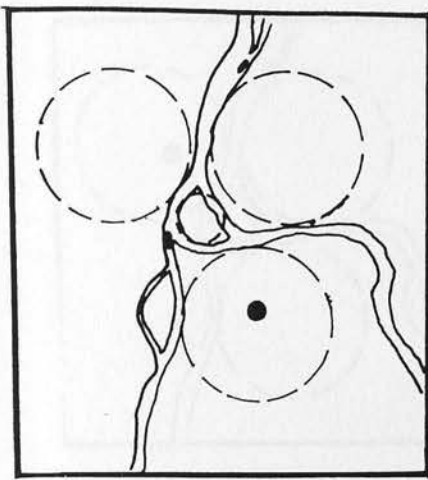
● Position of one person

- Adult standing
- Adult sitting
- X Adult doing something
- △ Child sitting
- ▲ Child playing
- Chat across the street

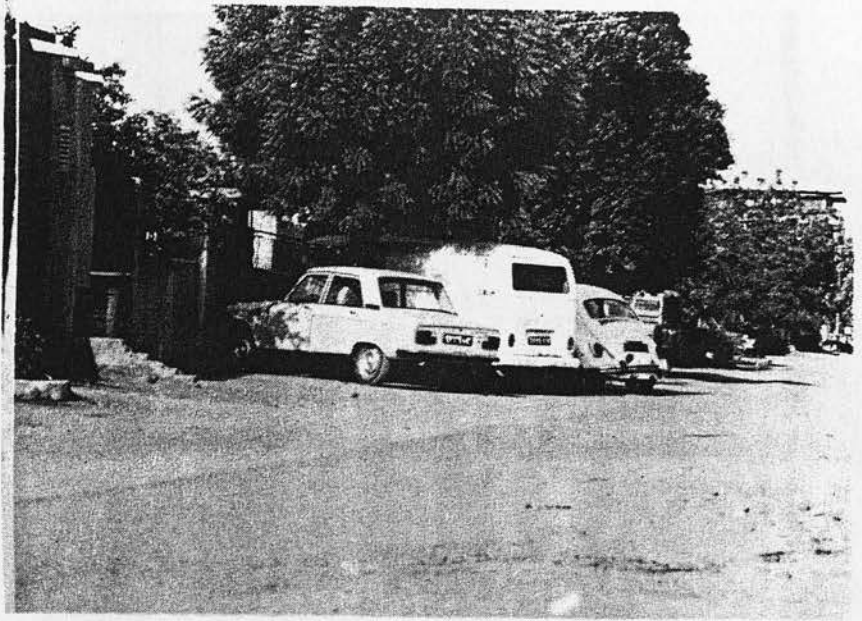


Street Plan

A newly built spacious first class neighbourhood. Due to its location, the street has been used as a passing route to other areas. Activities were concentrated around the drinking water point, a shop and lady selling fruit and vegetables.



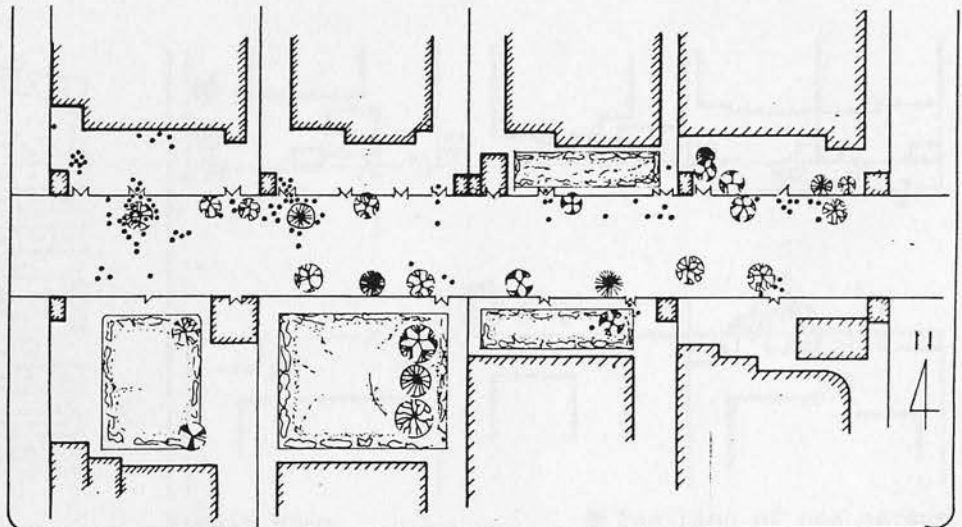
Location Plan



View from the street

33	35	37	39	41	43	45	47
33	35	37	39	41	43	45	47
32	34	36	38				47
47 th	AVENUE	Market					
33	35	37	39	41	43	45	47
32	34	36	38	40	42	44	46
47 th	Avenue	East					47
33	35	37	39	41	43	45	46
51 st	Avenue						47
37	39	41	43	45			47
36	38	40	42				46

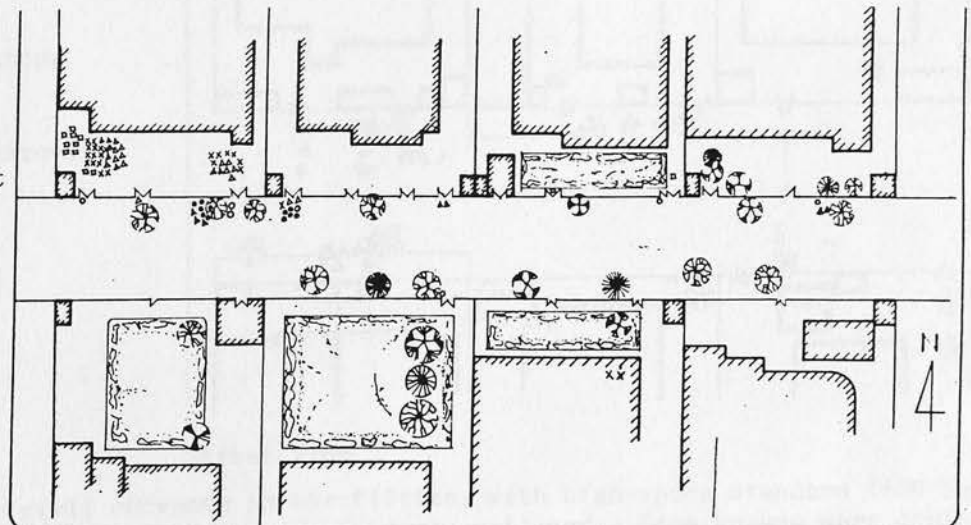
Area Plan



Street Plan

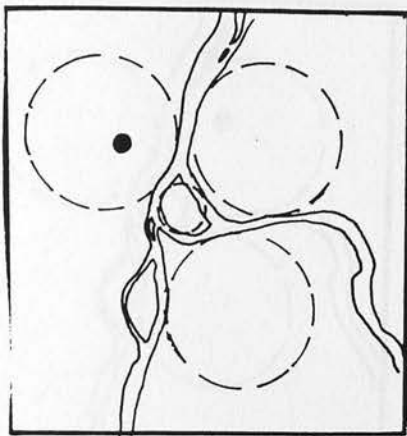
● Position of one person

- Adult standing
- Adult sitting
- ✕ Adult doing something
- △ Child sitting
- ▲ Child playing
- Chat across the street



Street Plan

Plot areas are 850 Square metres. The street has few activities, due to social structure of the neighbourhood.



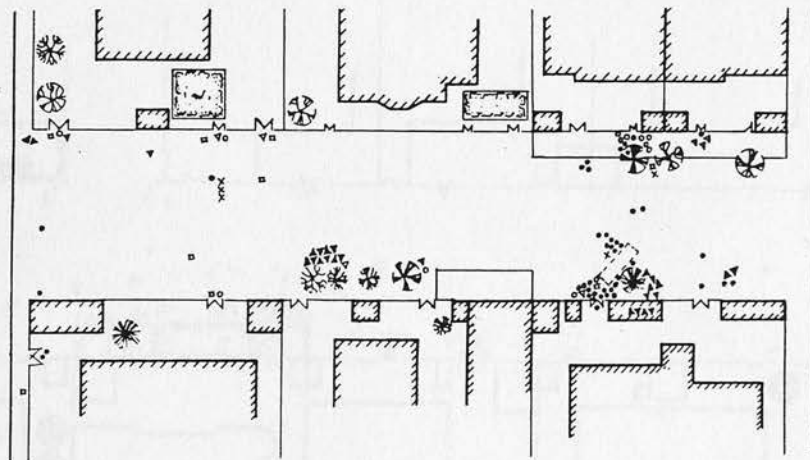
Location Plan



View from the street



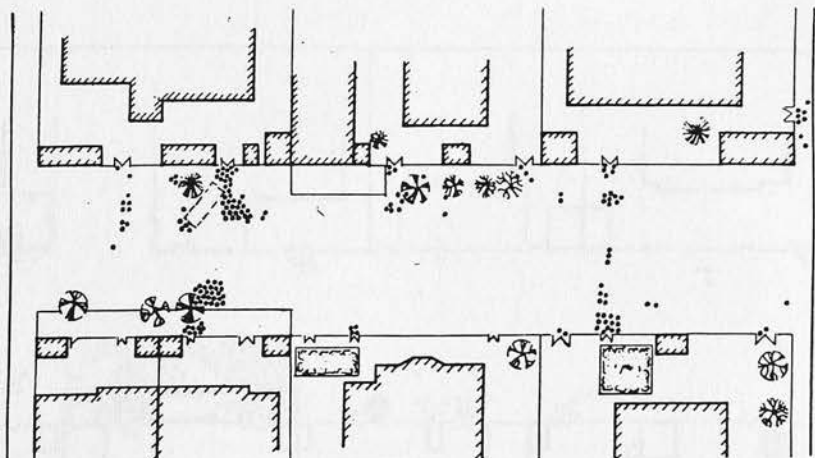
Area Plan



Street Plan

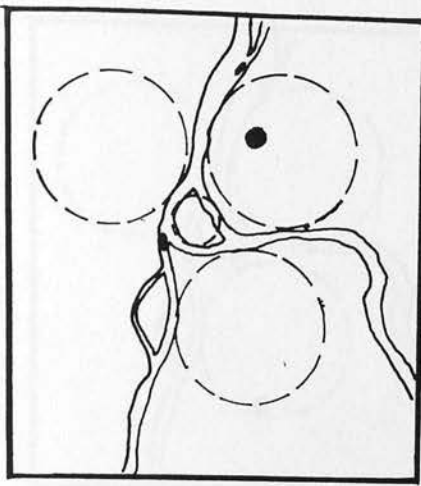
● Position of one person

- Adult standing
- Adult sitting
- ✕ Adult doing something
- △ Child sitting
- ▲ Child playing
- Chat across the street

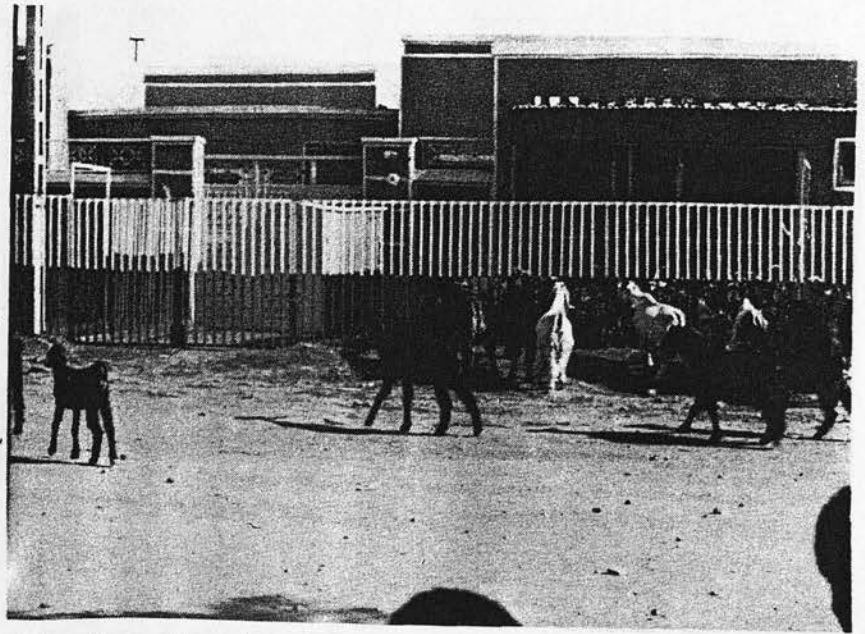


Street Plan

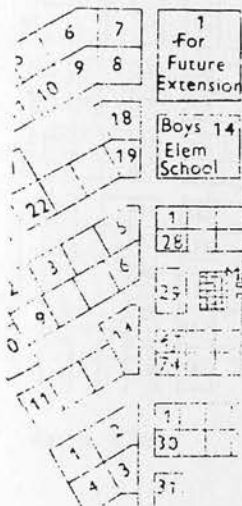
Was allocated for civil servants in the fifties, with high space standard (600 Square metres), and open spaces which are not properly utilized. Some houses were divided into two plots to accommodate two families.



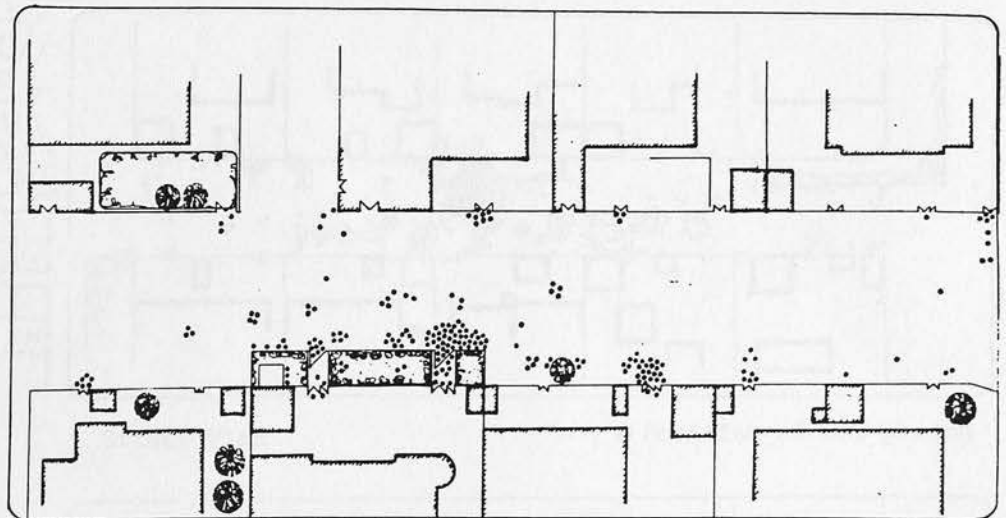
Location Plan



View from the street

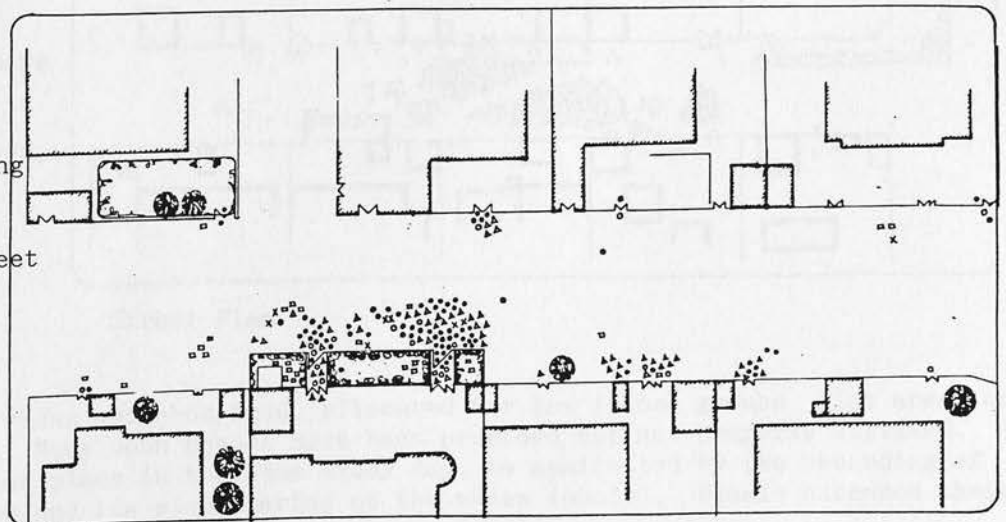


Area Plan



Street Plan

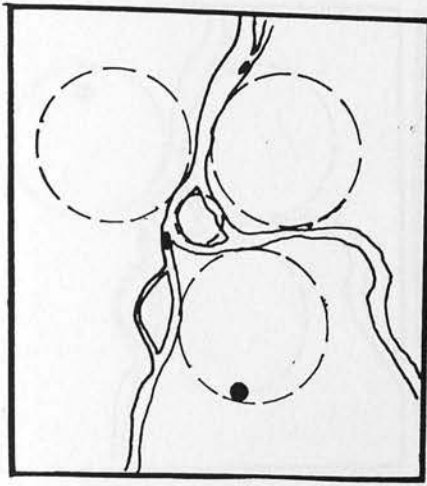
● Position of one person



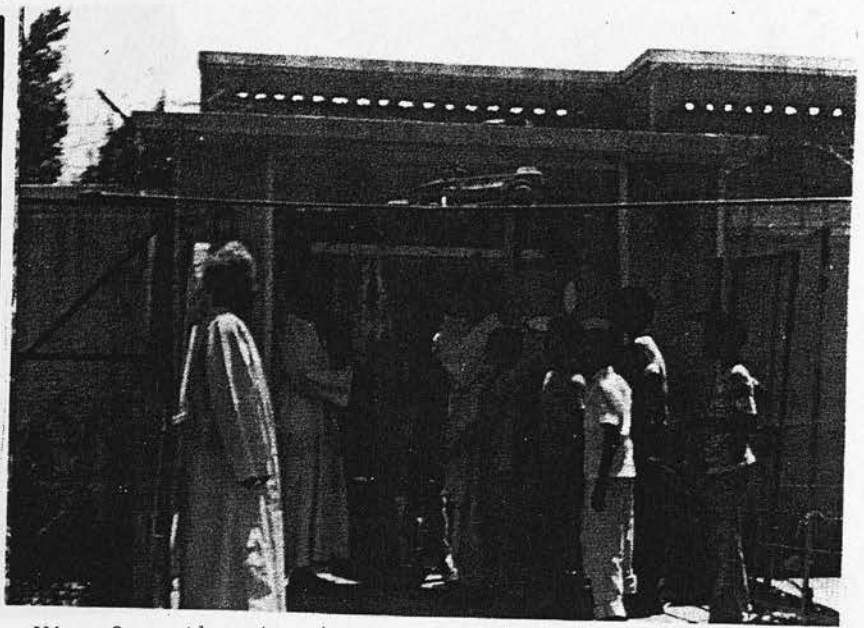
Street Plan

- Adult standing
- Adult sitting
- × Adult doing something
- △ Child sitting
- ▲ Child playing
- Chat across the street

A recent second class neighbourhood, with spacious houses (750 square metres), despite that part of the street has been fenced for family activities, and goats were grazing around the fenced area.



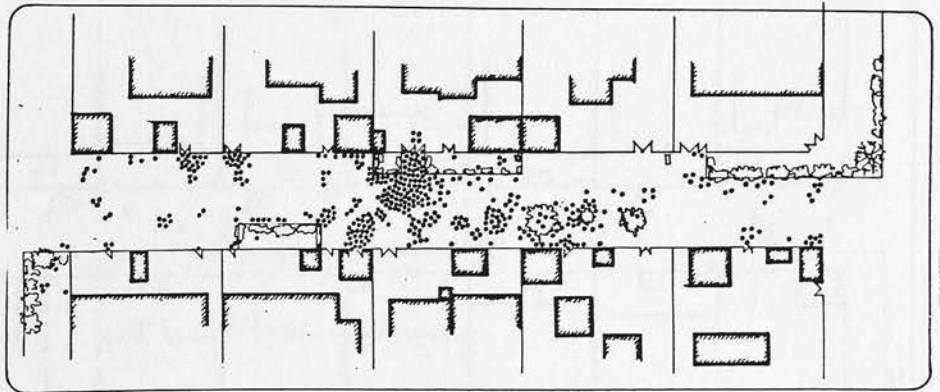
Location Plan



View from the street

63		67	99	97
71	70	68	100	102
88	89	91	105	103
5	95	92	106	108
3	114	117	112	109
121		118	132	
122		125	133	
127		126		
128		129	156	
133		130	157	160
134		137	162	

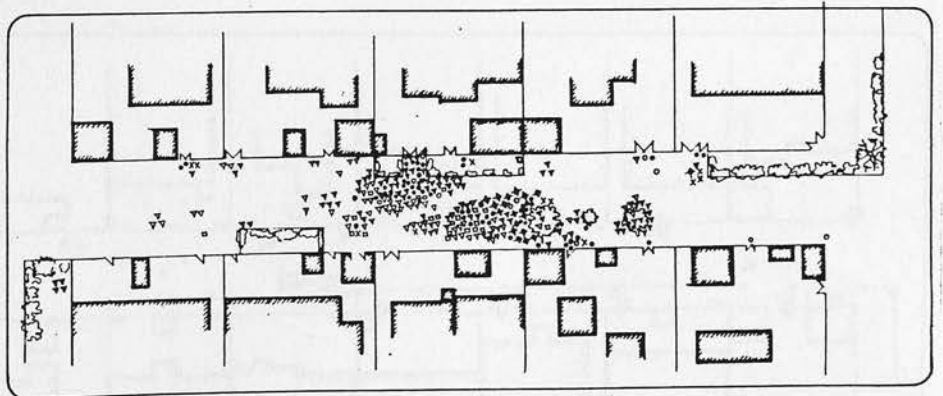
Area Plan



Street Plan

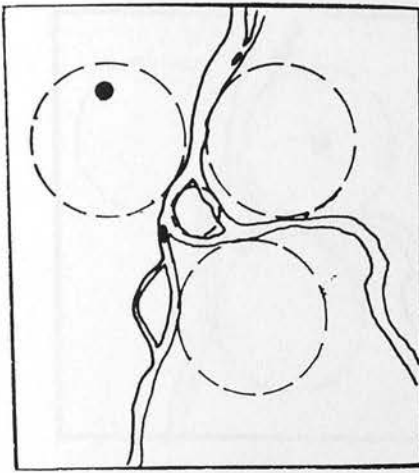
● Position of one person

- Adult standing
- Adult sitting
- X Adult doing something
- △ Child sitting
- ▲ Child playing
- Chat across the street

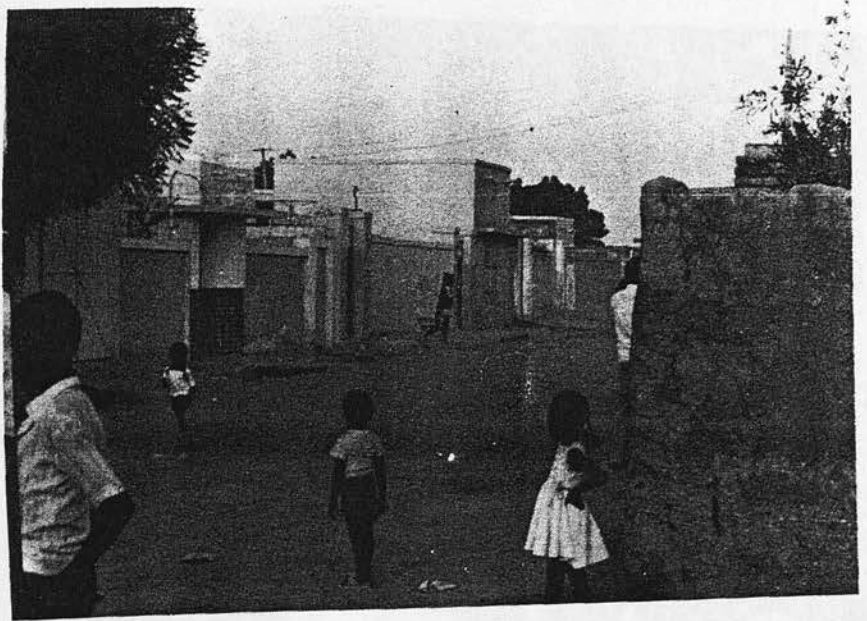


Street Plan

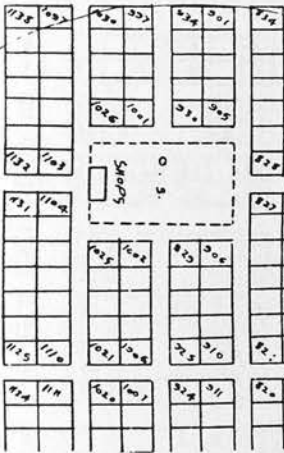
Is a recent third class neighbourhood, allocated for low income groups, plot areas are 360 square metres. Many open spaces have been provided but not properly utilized. A naming ceremony took place in the same study day, as manifested by the recording of people's activities and the slaughtering of the sheep (photo). People extended their houses to the street.



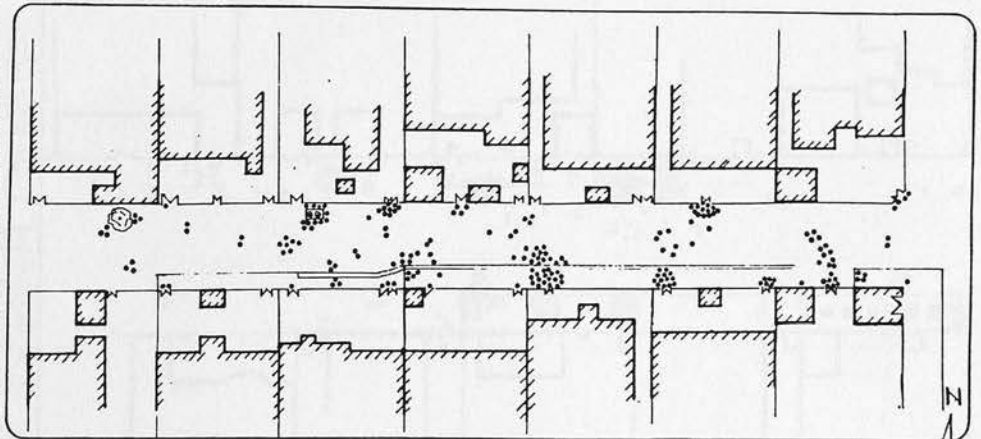
Location Plan



View from the street



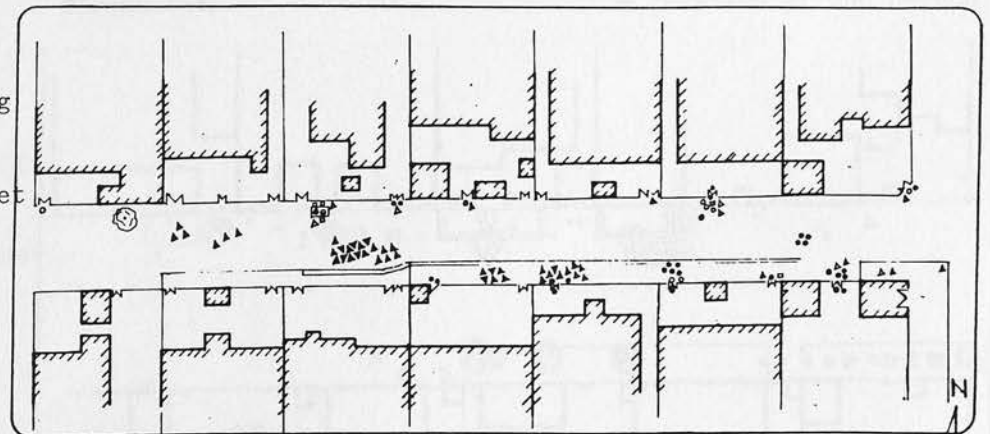
Area Plan



Street Plan

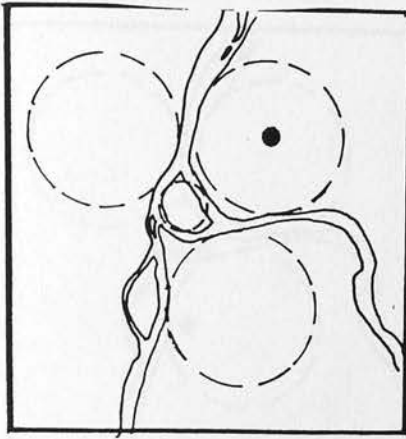
● Position of one person

- Adult standing
- Adult sitting
- X Adult doing something
- △ Child sitting
- ▲ Child playing
- Chat across the street

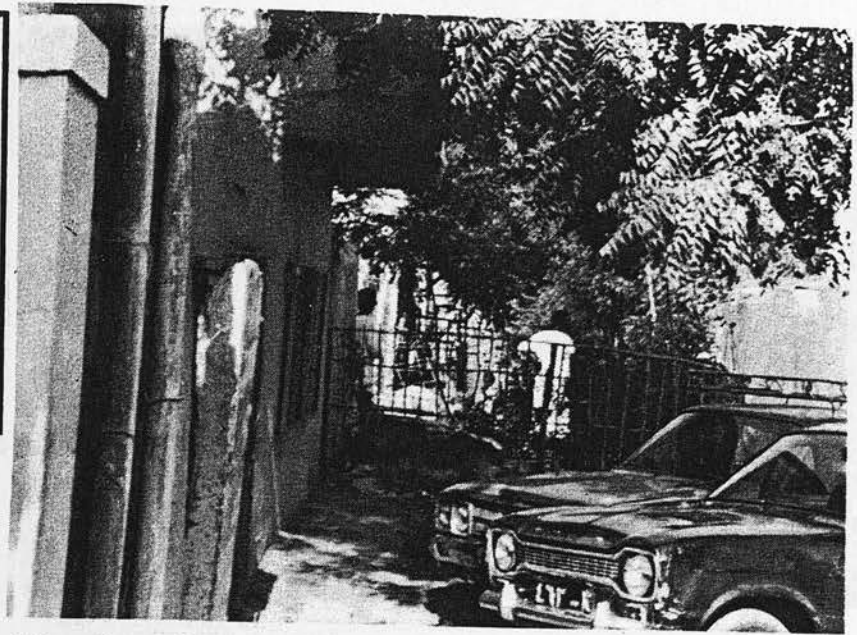


Street Plan

It is third class housing, allocated for low income people. Most open spaces provided, recently have been reallocated for small industries. A corner shop and a drinking water point attracted most people in the street.



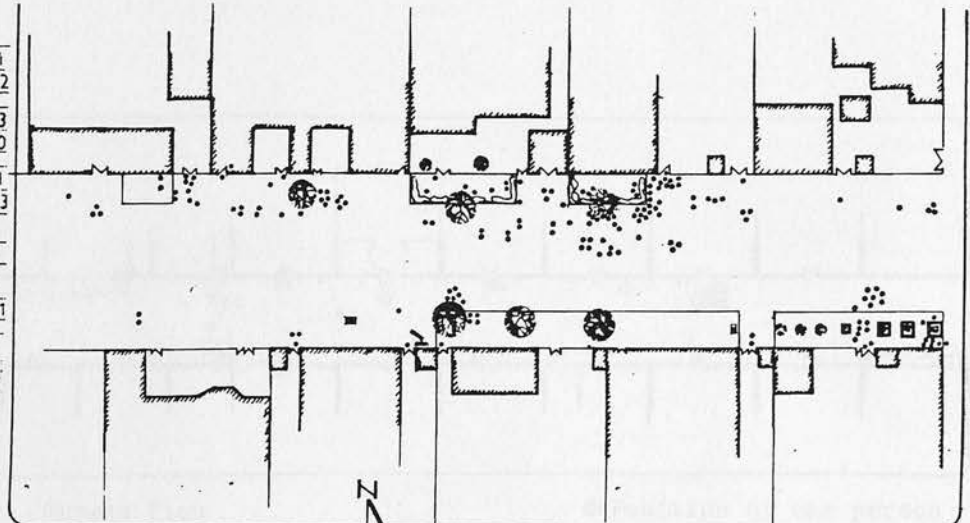
Location Plan



View from the street

6	1	3	4	6	1
7	12	10	9	7	12
16	13	14	15	16	13
17	20	19	18	17	20
26	21	23	24	26	21
27	32	30	29	27	3
4	1	2	3	7	1
15	11	10	9	8	7
37	12	16	17	18	11
18	22	21	20	19	17
0	23	24	25	26	23
1	33	32	31	27	27
5	1	5	6	7	1
6	11	10	9	8	1

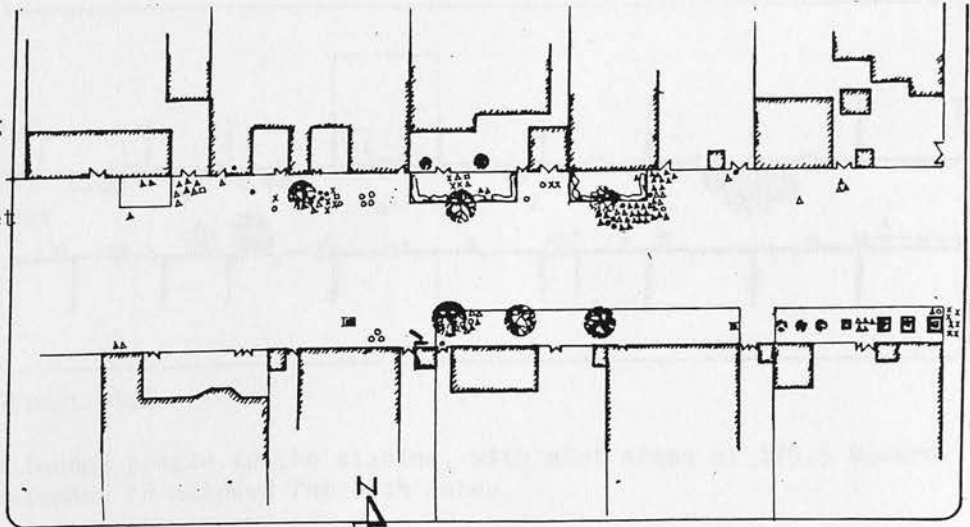
Area Plan



Street Plan

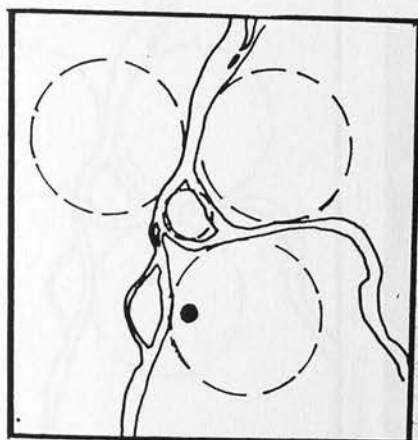
● Position of one person

- Adult standing
- Adult sitting
- × Adult doing something
- △ Child sitting
- ▲ Child playing
- Chat across the street

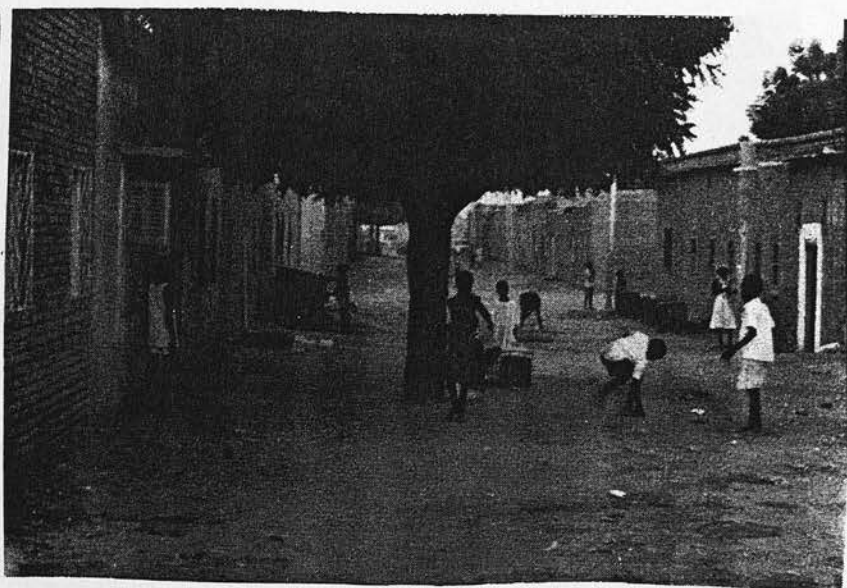


Street Plan

Is a recently built third class neighbourhood. The plots are 300 square metres. Parts of the streets have been fenced for some daily activities.



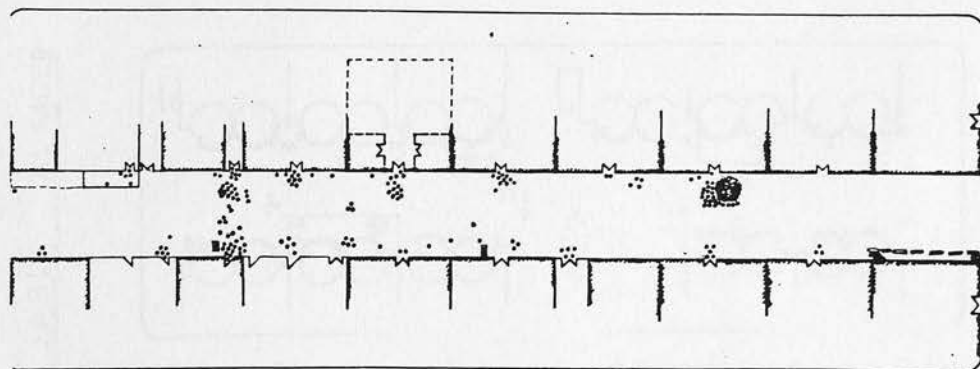
Location Plan



View from the street

17				24	17				25
25				32	25				32
33				40	33				40
41				48	41				48
49	1			8	49	1			8
9				16	50	9			16
17				24	51	17			24
25				32	52	25			32
33				40	53	33			40
41				48	54	41			48
49	1			8	49	1			8
9				16	50	9			16

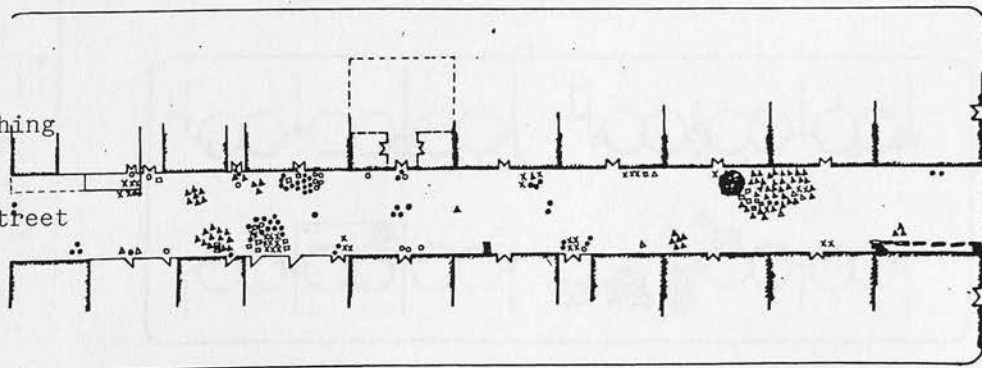
Area Plan



Street Plan

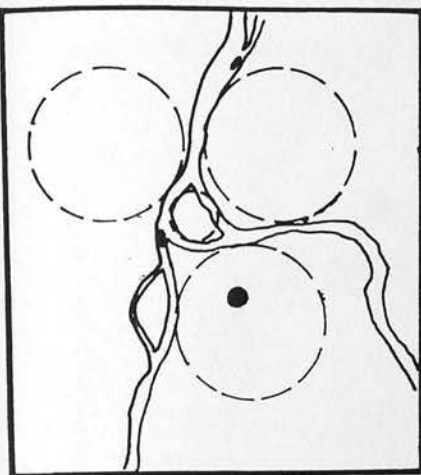
● Position of one person

- Adult standing
- Adult sitting
- X Adult doing something
- △ Child sitting
- ▲ Child playing
- Chat across the street



Street Plan

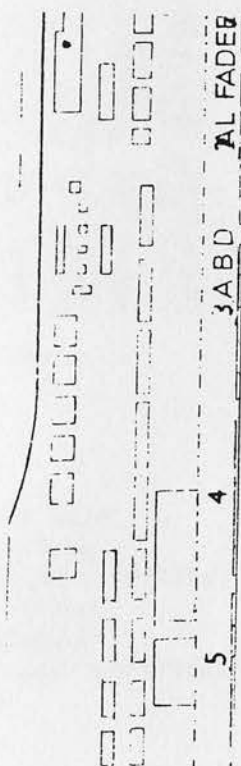
Was planned for low income people in the sixties, with plot areas of 175.5 Square Metres. Only one entrance is allowed for both sexes.



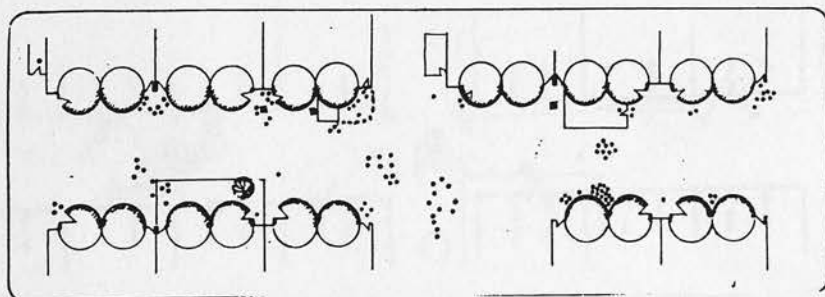
Location Plan



View from the street

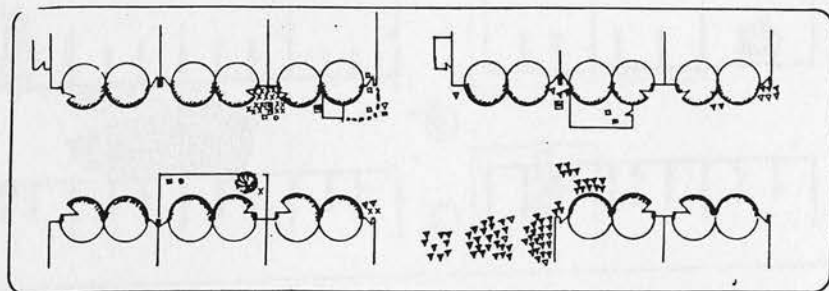


Area plan



Street Plan

● Position of one person



Street plan

○ Adult standing

× Adult doing something

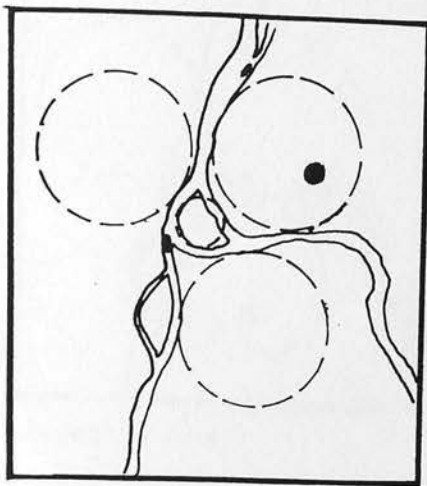
▲ Child playing

● Adult sitting

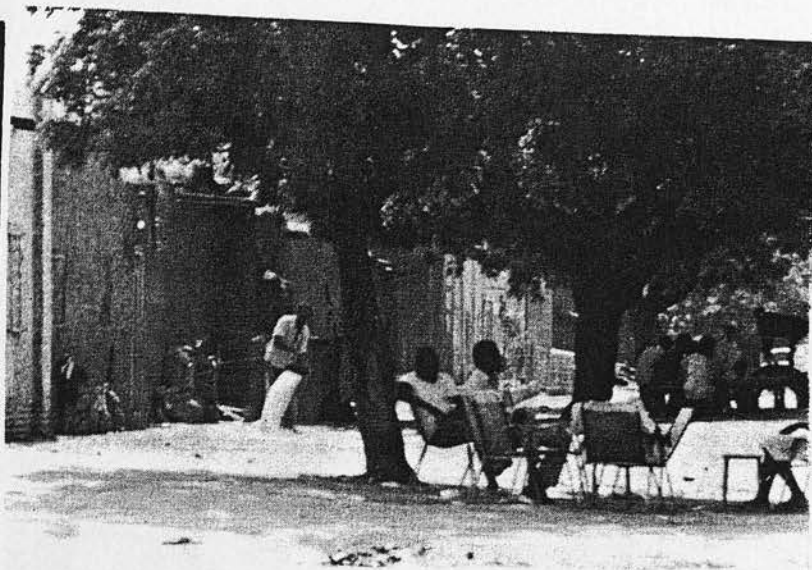
▲ Child sitting

□ Chat across the street

Houses are in form of huts built for the Sudan railway's workers. Plot areas are 100 square metres - residents attached sheds to their houses to house hens and goats.



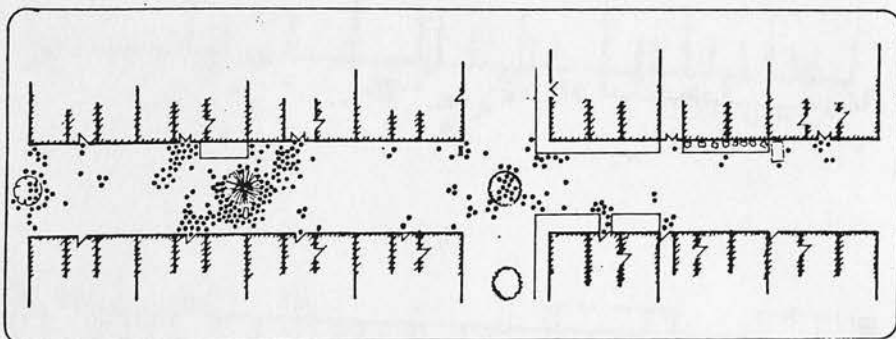
Location Plan



View from the street

41	60	58	55	51
40	41	45	44	50
25	40	36	35	31
24	21	23	26	30
9	20	16	15	11
8	1	5	6	10
72	60	58	55	51
21	41	45	44	50
8	40	36	35	31
7	21	23	26	30
	20	16	15	11
	1	5	6	10

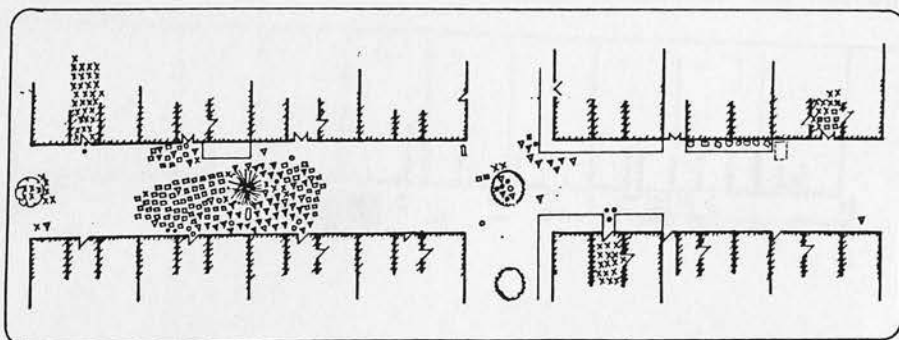
Area Plan



Street Plan

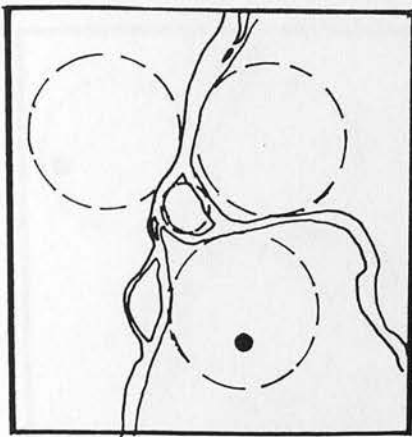
● Position of one person

- Adult standing
- Adult sitting
- ✕ Adult doing something
- △ Child sitting
- ▲ Child playing
- Chat across the street



Street Plan

Low cost housing, planned in 1950 for labourers. The plot area is 175.5 Square Metres. Trees are planted in the middle of the road, allowing people to play cards and spend most of their time under the shady trees.



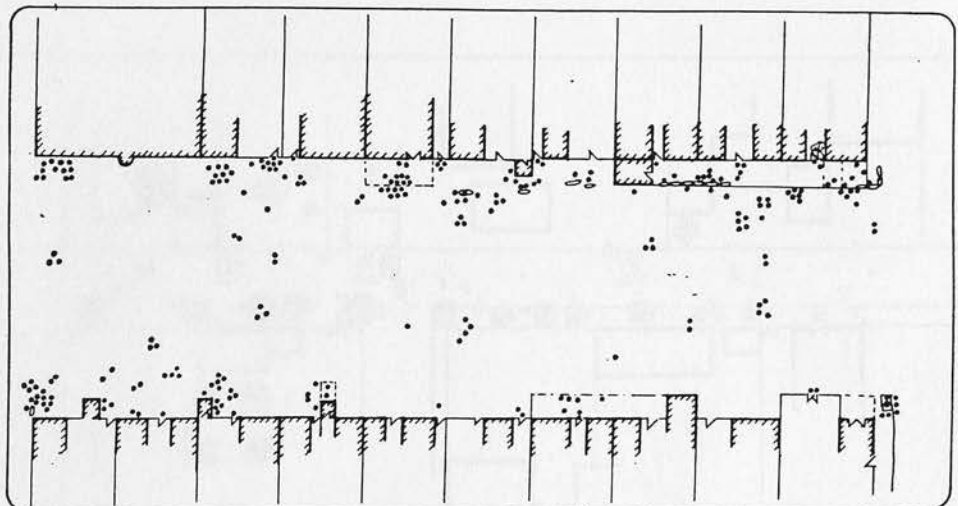
Location Plan



View from the street



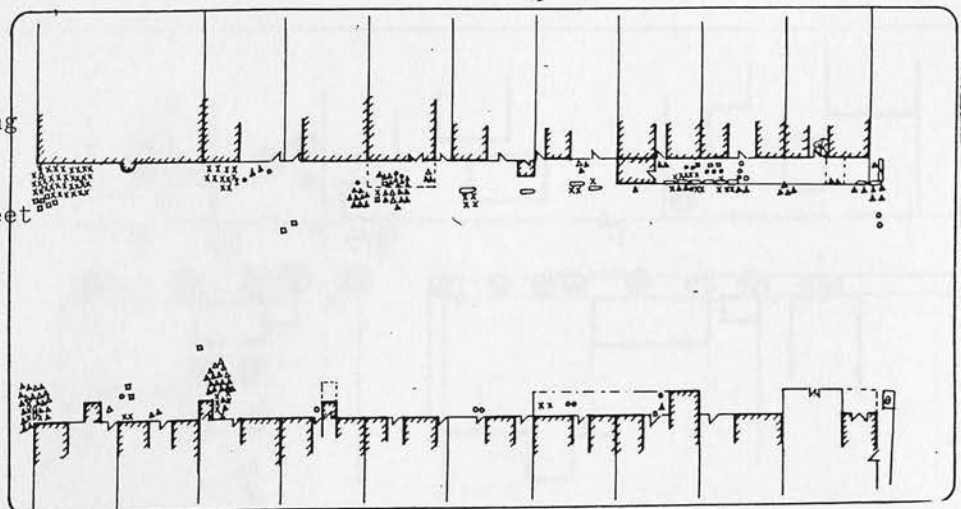
Area Plan



Street Plan

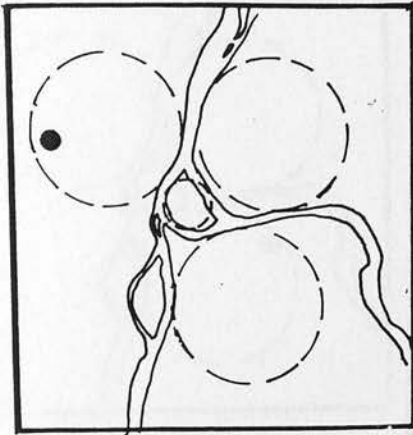
● Position of one person

- Adult standing
- Adult sitting
- X Adult doing something
- △ Child sitting
- ▲ Child playing
- Chat across the street

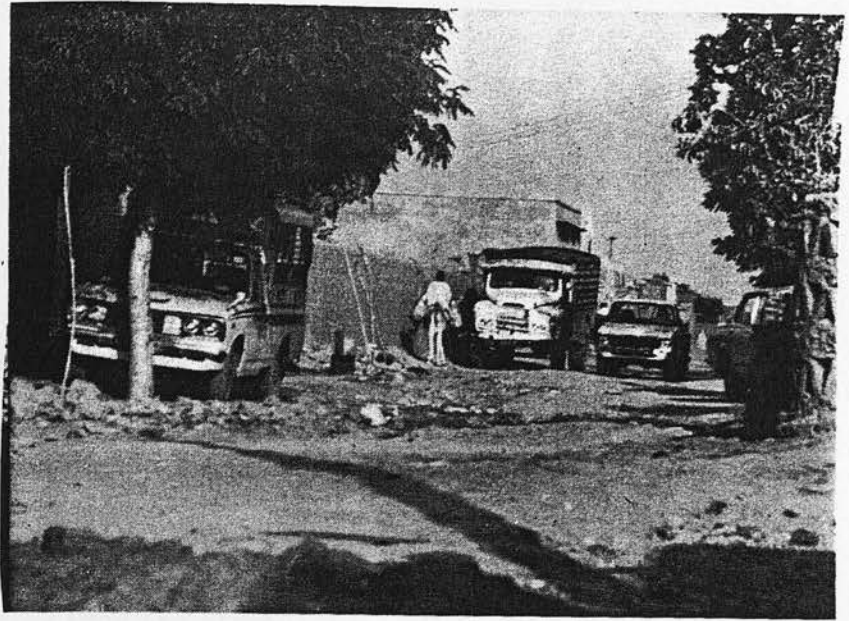


Street Plan

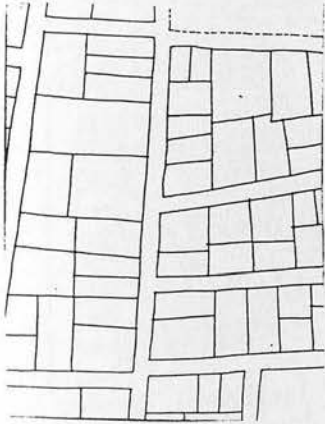
Was planned for low income people with the minimum plot size (100 Square Metres) and wide roads (30 Metres). Additions have been added in the form of rooms and sheds. Even the semi-private area has been annexed to the house (the lady in the photo cleans her part of the street for evening socialization).



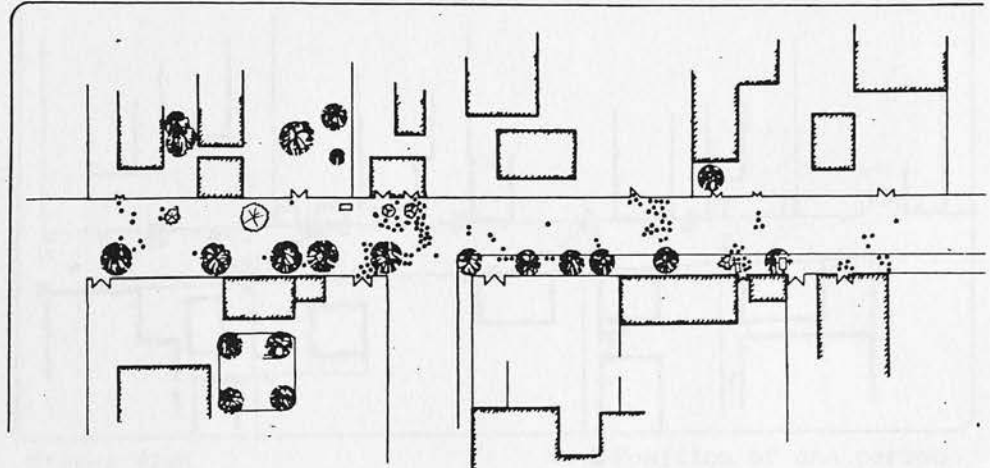
Location Plan



View from the street



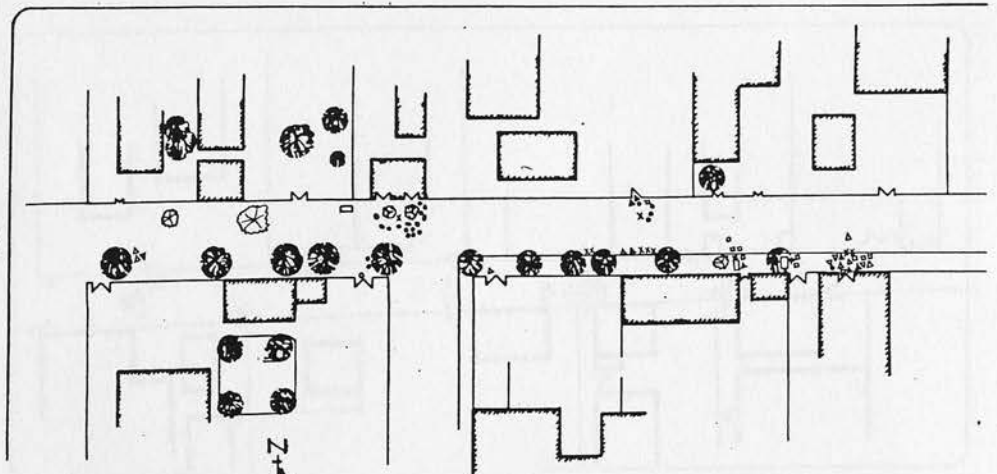
Area Plan



Street Plan

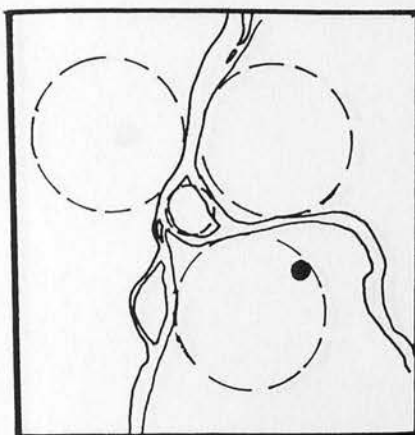
● Position of one person

- Adult standing
- Adult sitting
- X Adult doing something
- △ Child sitting
- ▲ Child playing
- Chat across the street

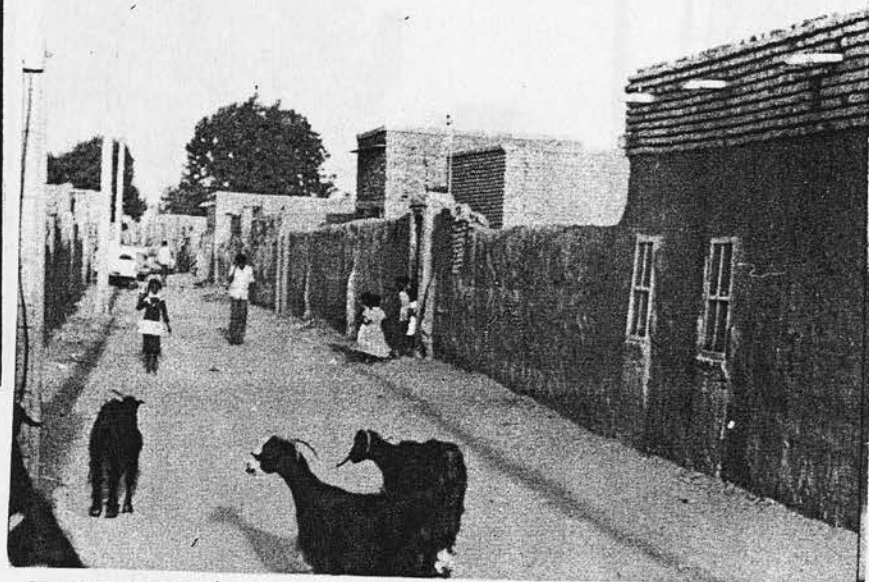


Street Plan

A recent indigenous neighbourhood, and replanned recently to cater for services (water pipes and electricity). But still most residents have large houses.



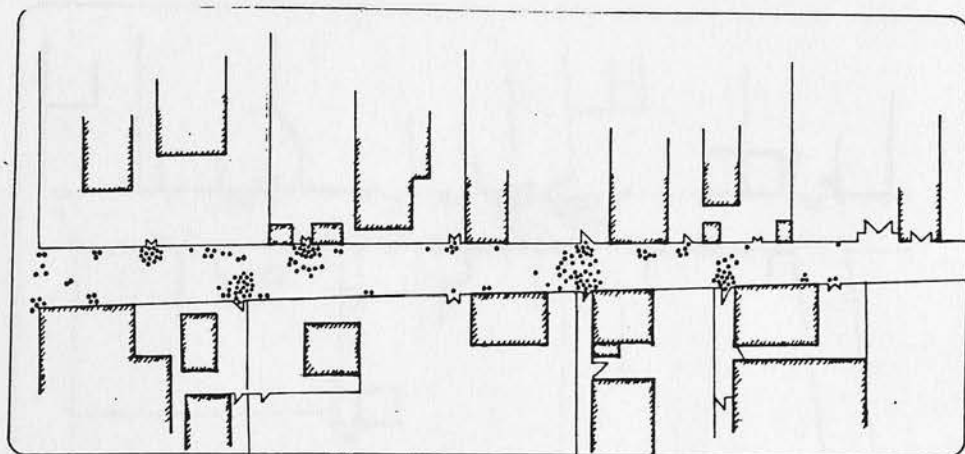
Location Plan



View from the street



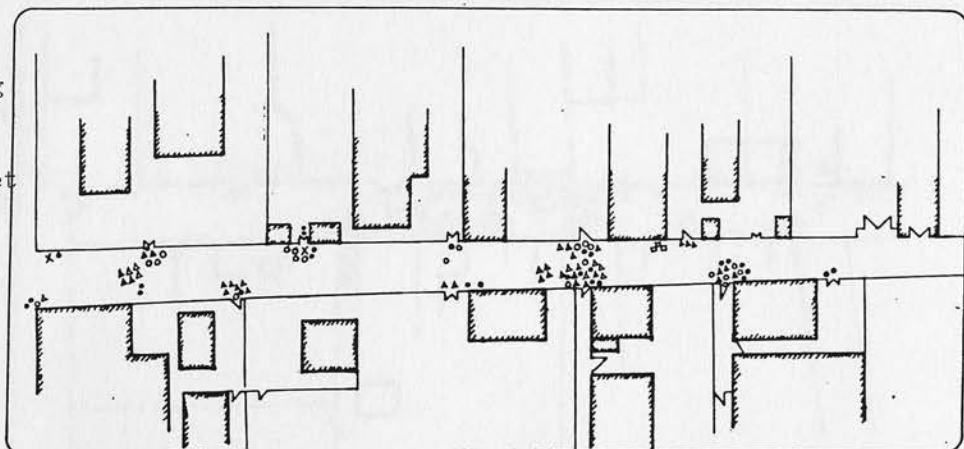
Area Plan



Street Plan

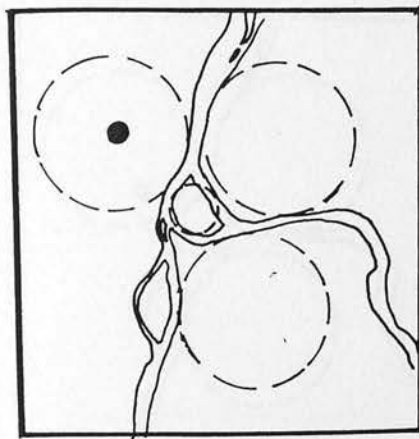
● Position of one person

- Adult standing
- Adult sitting
- ✕ Adult doing something
- △ Child sitting
- ▲ Child playing
- Chat across the street

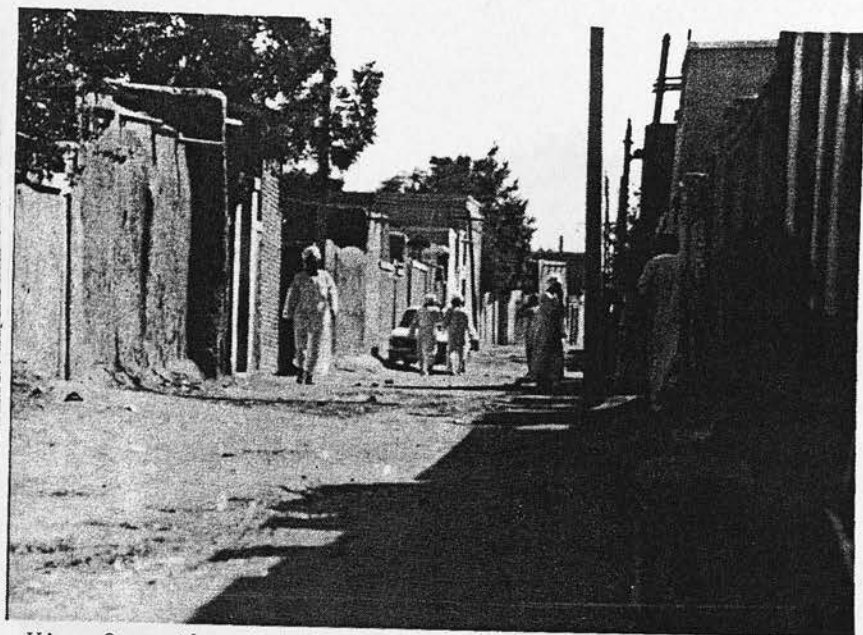


Street Plan

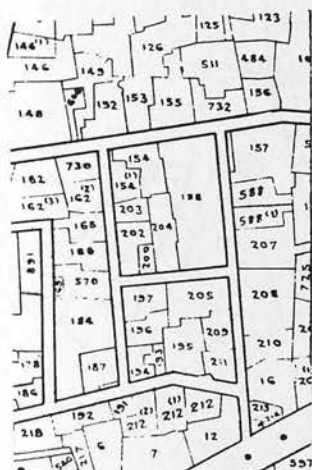
Is a very old indigenous neighbourhood, although some replanning policies have been implemented, yet it has kept its physical character and family structure, and daily life as in most Sudanese villages.



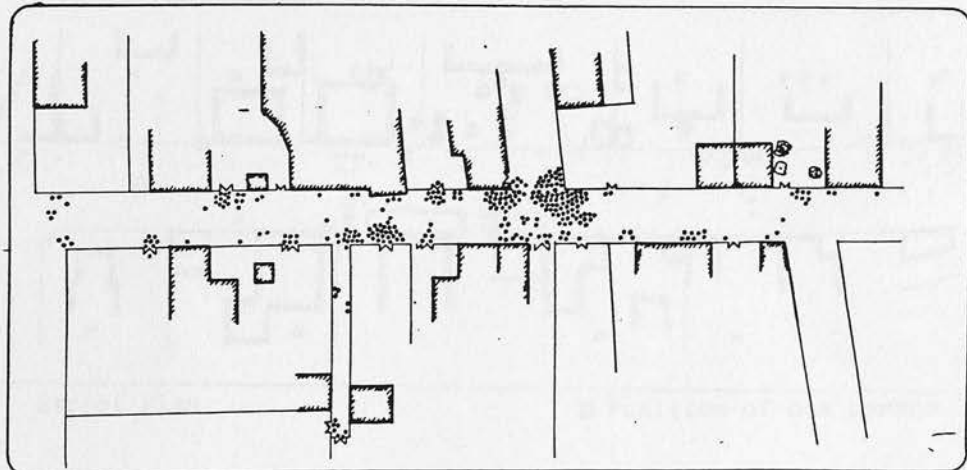
Location Plan



View from the street



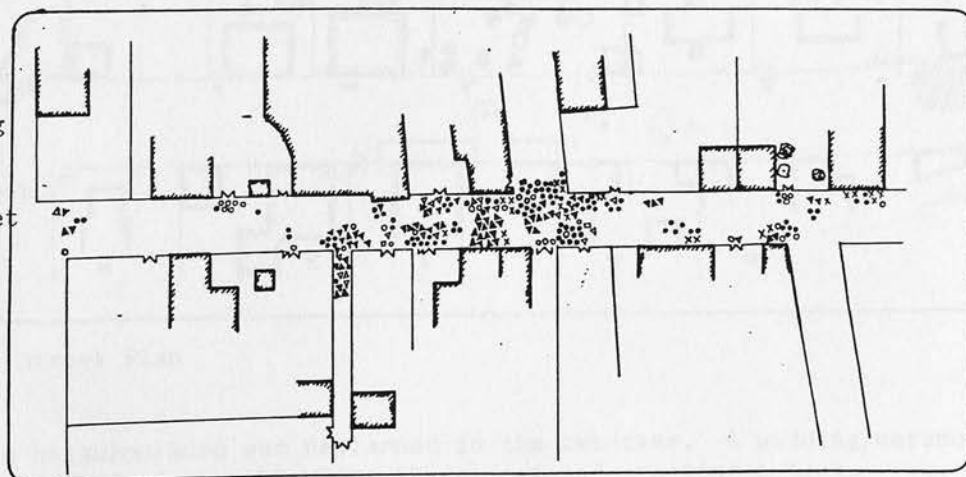
Area Plan



Street Plan

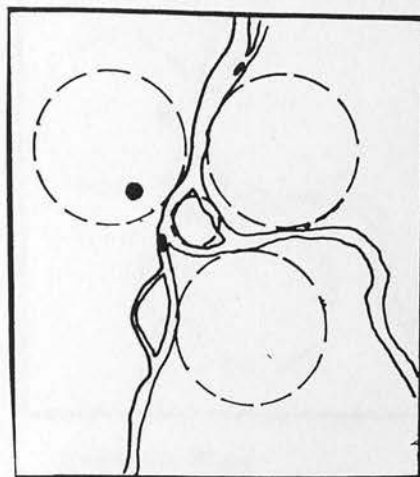
● Position of one person

- Adult standing
- Adult sitting
- ✕ Adult doing something
- △ Child sitting
- ▲ Child playing
- ▣ Chat across the street



Street Plan

Is an ancient indigenous neighbourhood, main roads were widened to allow traffic to serve different families. Despite this the width of the roads are about 6-6½ metres.



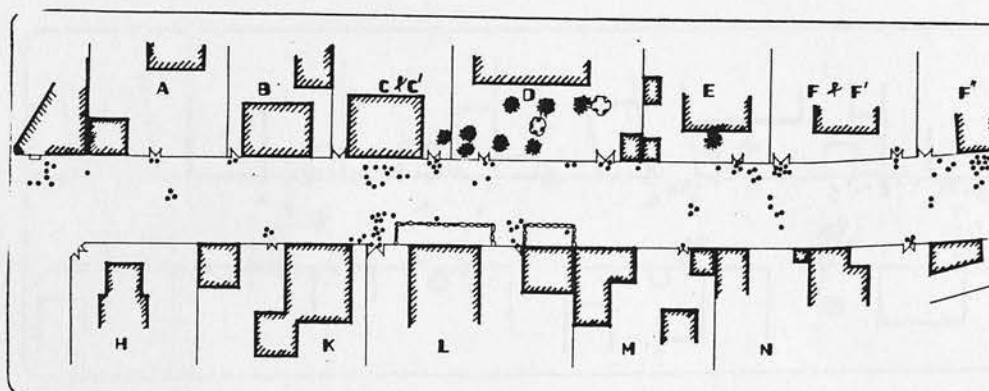
Location Plan



View from the street



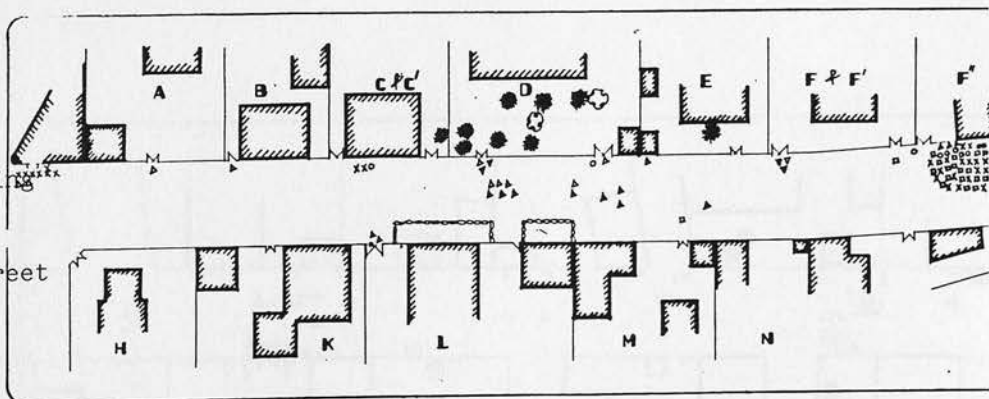
Area Plan



Street Plan

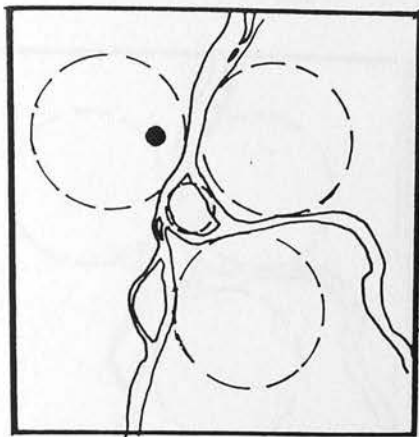
● Position of one person

- Adult standing
- Adult sitting
- × Adult doing something
- △ Child sitting
- ▲ Child playing
- Chat across the street



Street Plan

An ancient indigenous neighbourhood was replanned in the twenties. A wedding ceremony was taking place in the study day by blocking the street and erecting a tent.



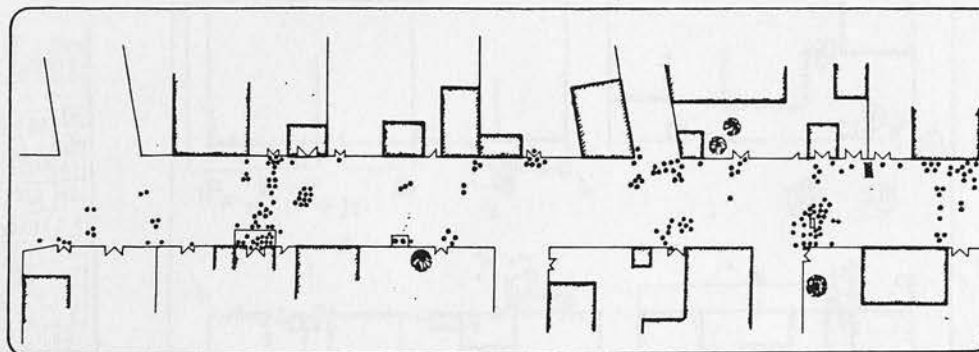
Location Plan



View from the street



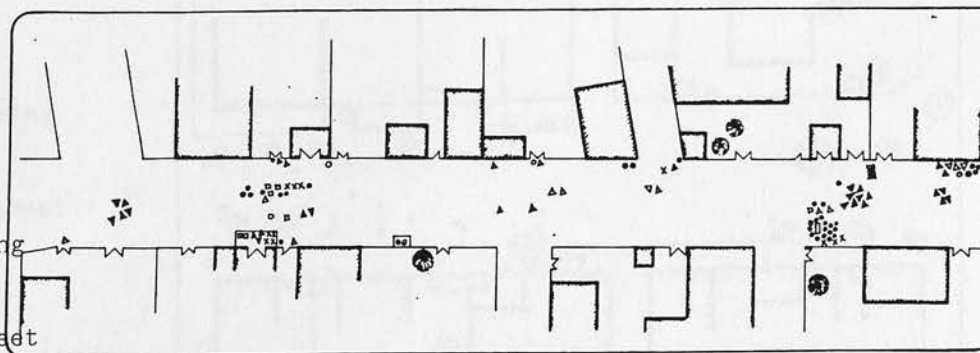
Area Plan



Street Plan

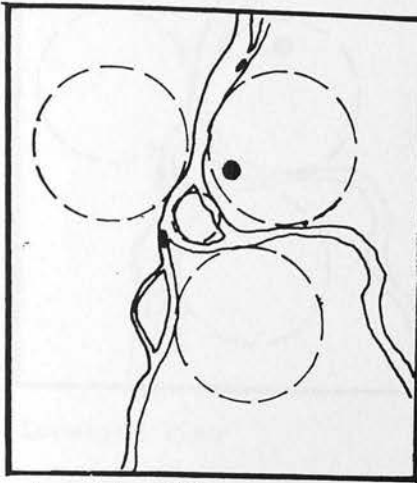
● Position of one person

- Adult standing
- Adult sitting
- X Adult doing something
- △ Child sitting
- ▲ Child playing
- Chat across the street

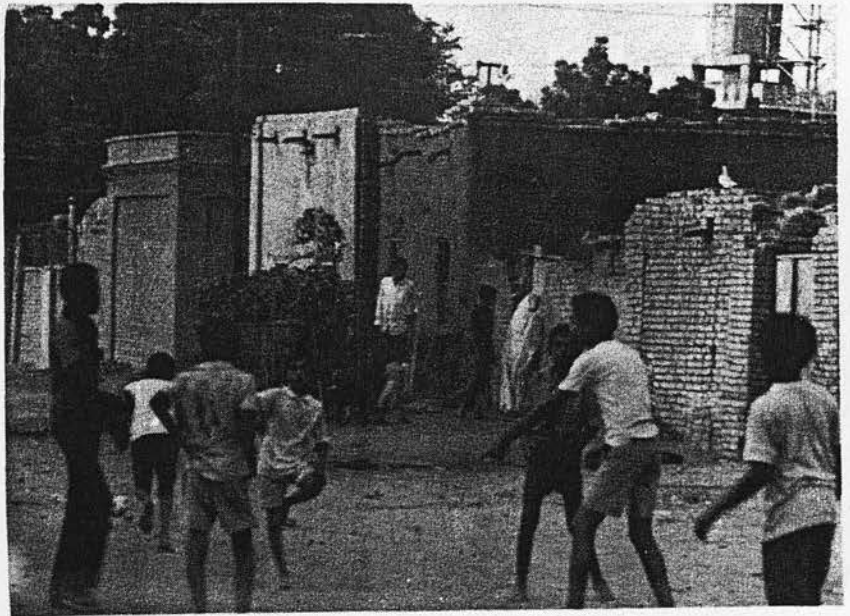


Street Plan

Is an ancient replanned indigenous neighbourhood. Most activities were because of food (take-away) shops. It is used as a through pedestrians' route to other areas.



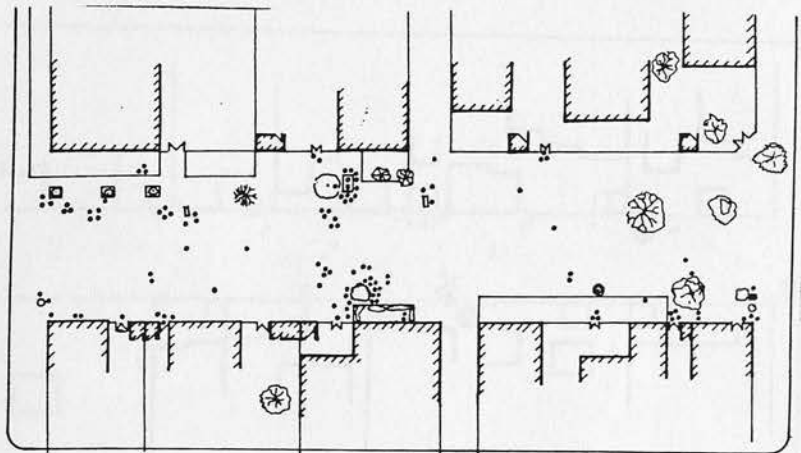
Location Plan



View from the street



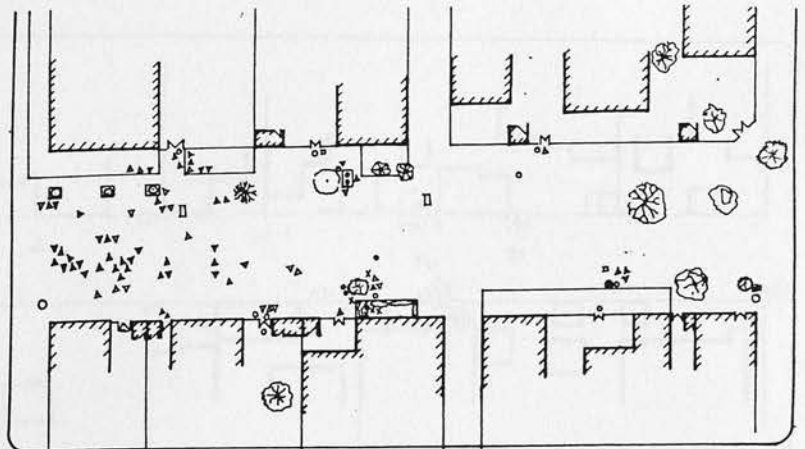
Area Plan



Street Plan

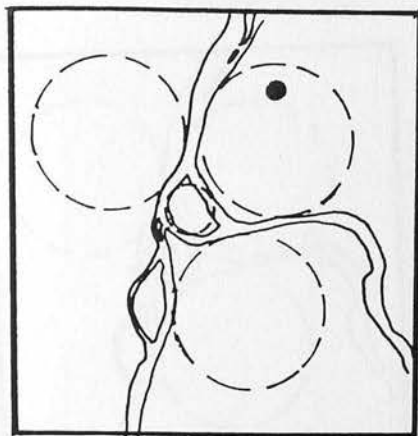
● Position of one person

- Adult standing
- Adult sitting
- × Adult doing something
- △ Child sitting
- ▲ Child playing
- Chat across the street



Street Plan

A replanned indigenous neighbourhood, additions have been added at the expense of the street. Children play football in the street (road width 20 metres).



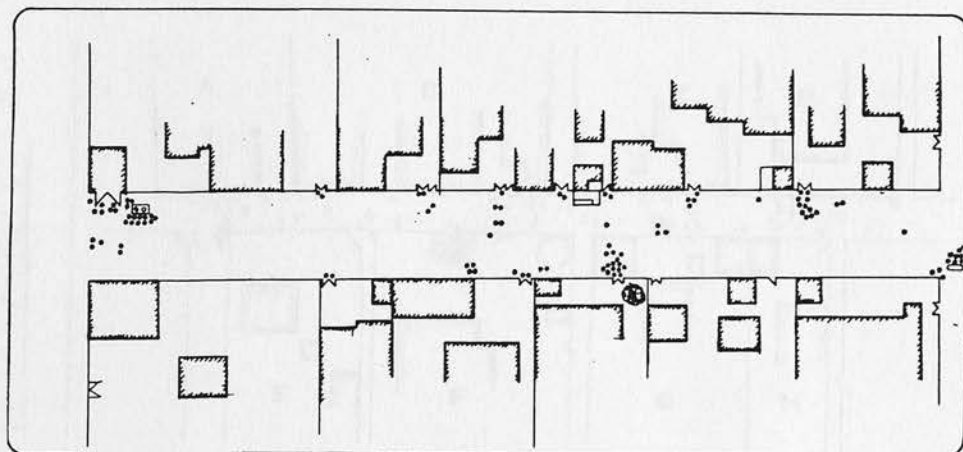
Location Plan



View from the street



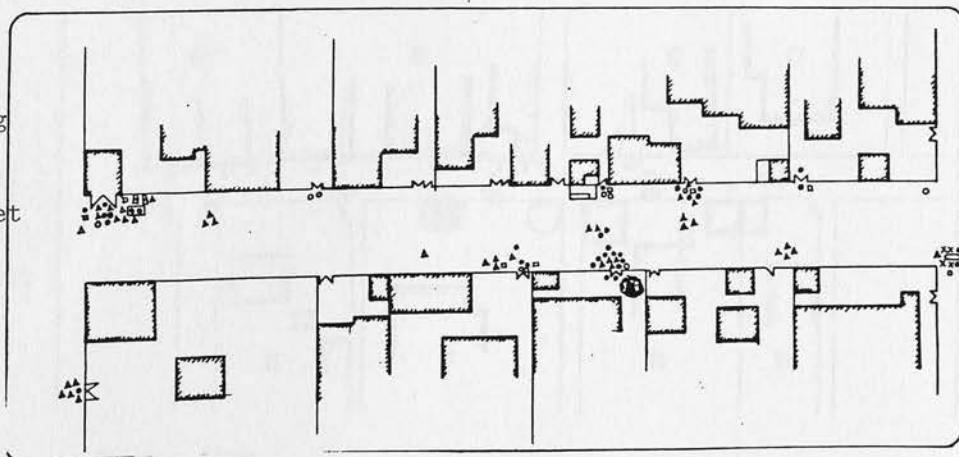
Area Plan



Street Plan

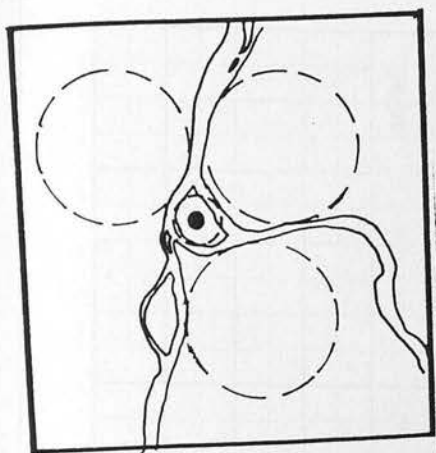
● Position of one person

- Adult standing
- Adult sitting
- X Adult doing something
- △ Child sitting
- ▲ Child playing
- Chat across the street

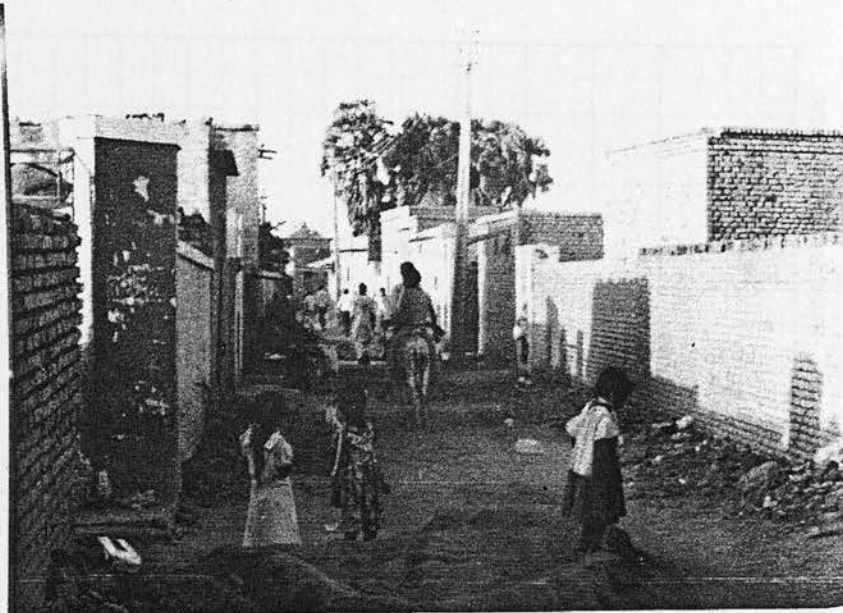


Street Plan

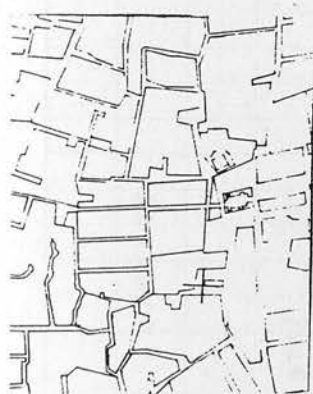
Is a recently replanned indigenous neighbourhood. Plot sizes are varying as is the case with other indigenous neighbourhoods.



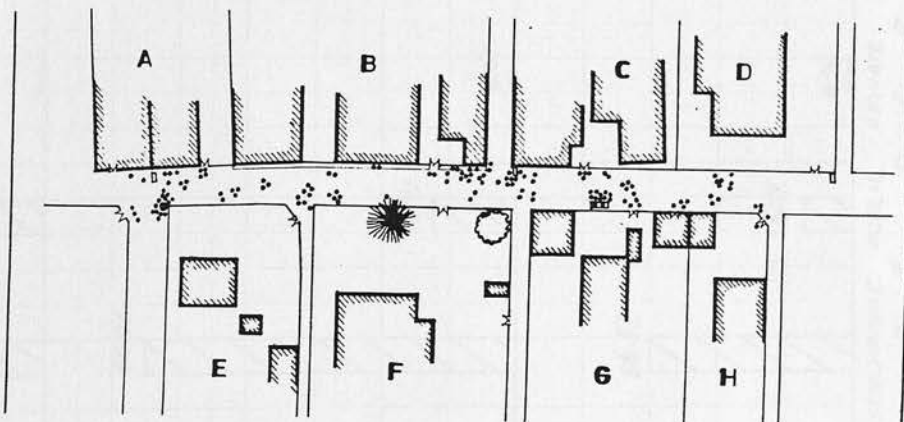
Location Plan



View from the street



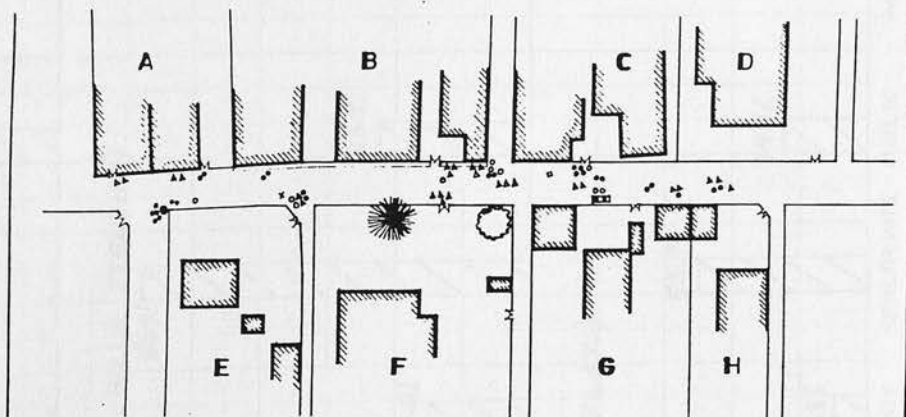
Area Plan



Street Plan

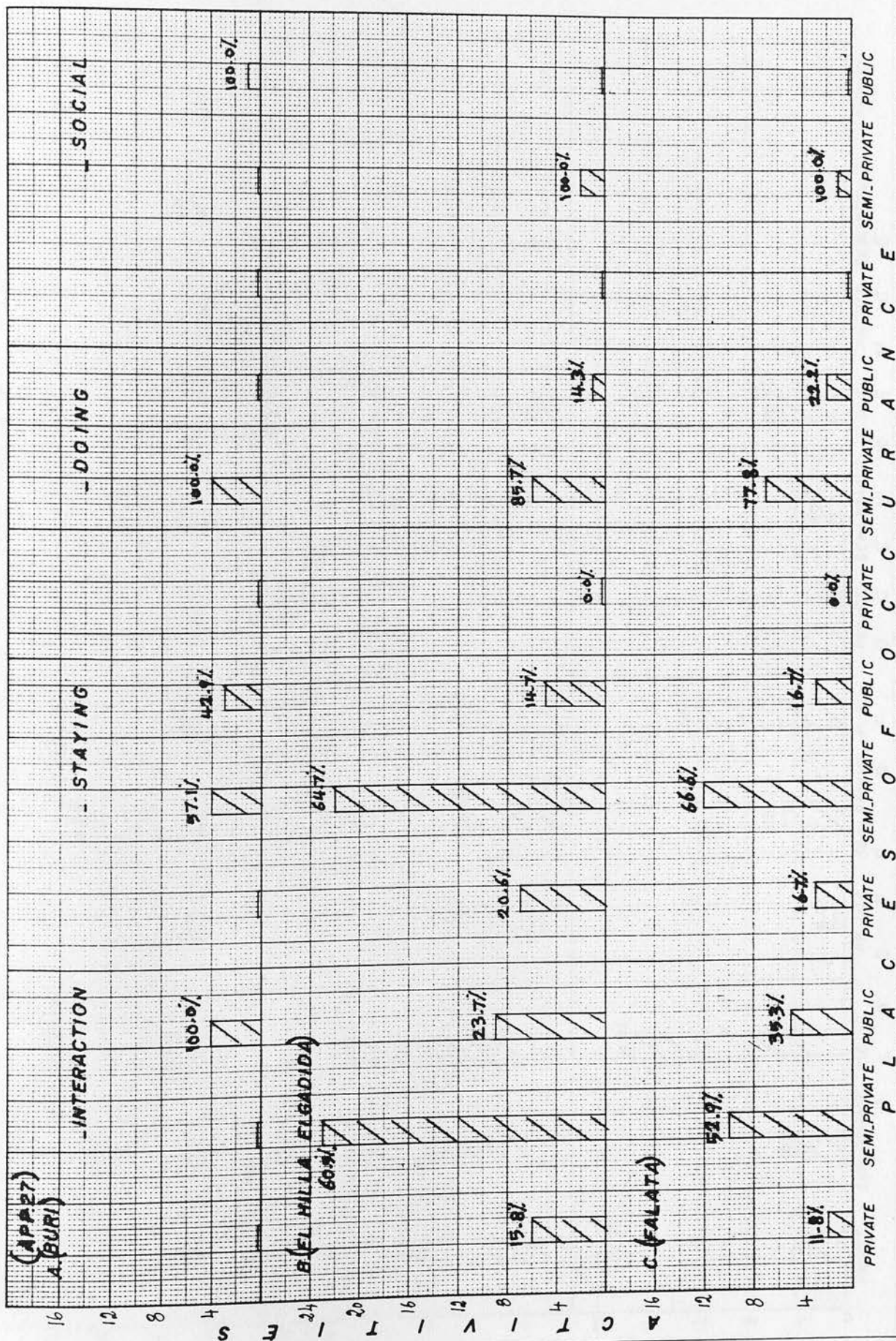
● Position of one person

- Adult standing
- Adult sitting
- X Adult doing something
- △ Child sitting
- ▲ Child playing
- Chat across the street

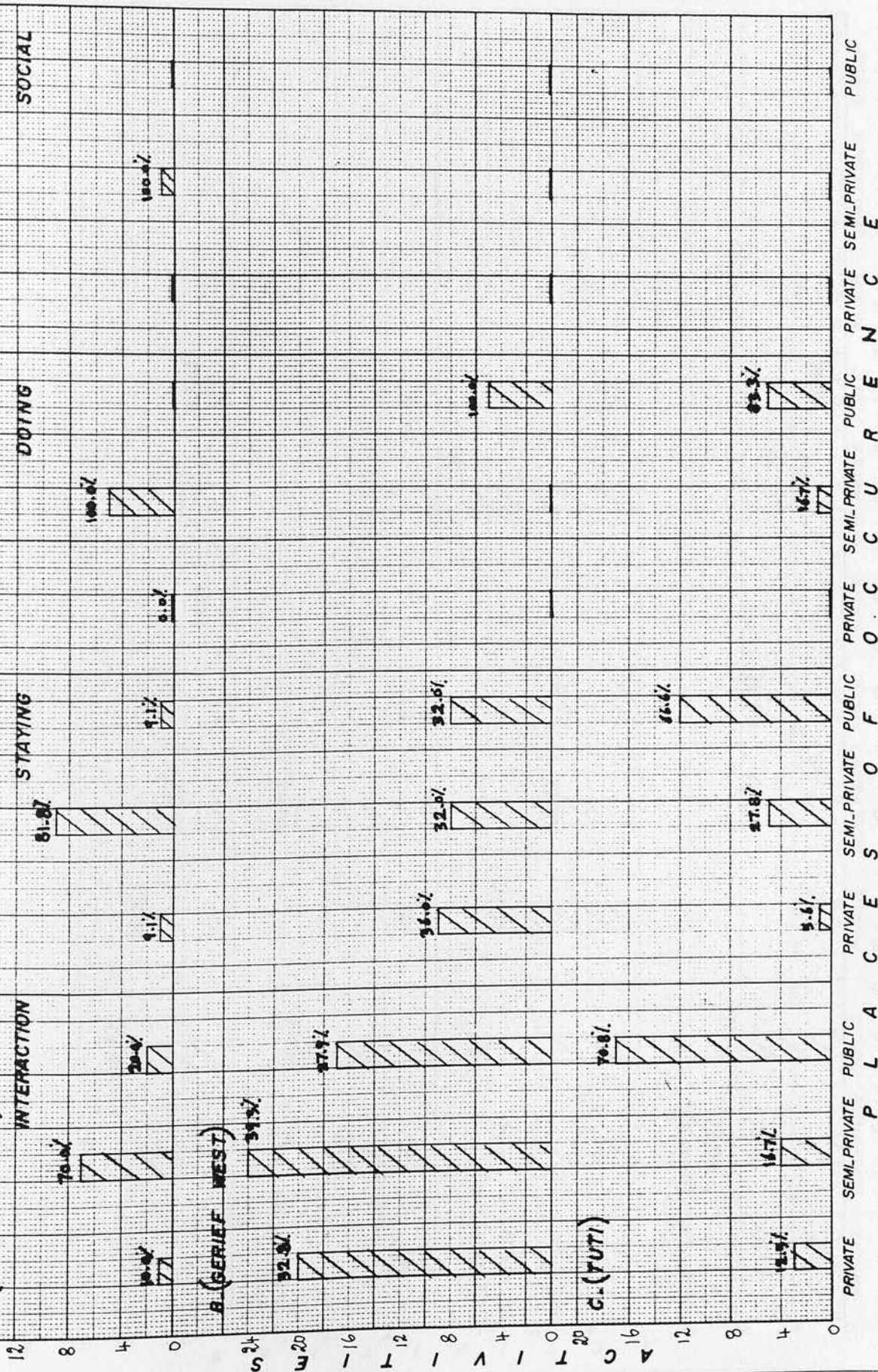


Street Plan

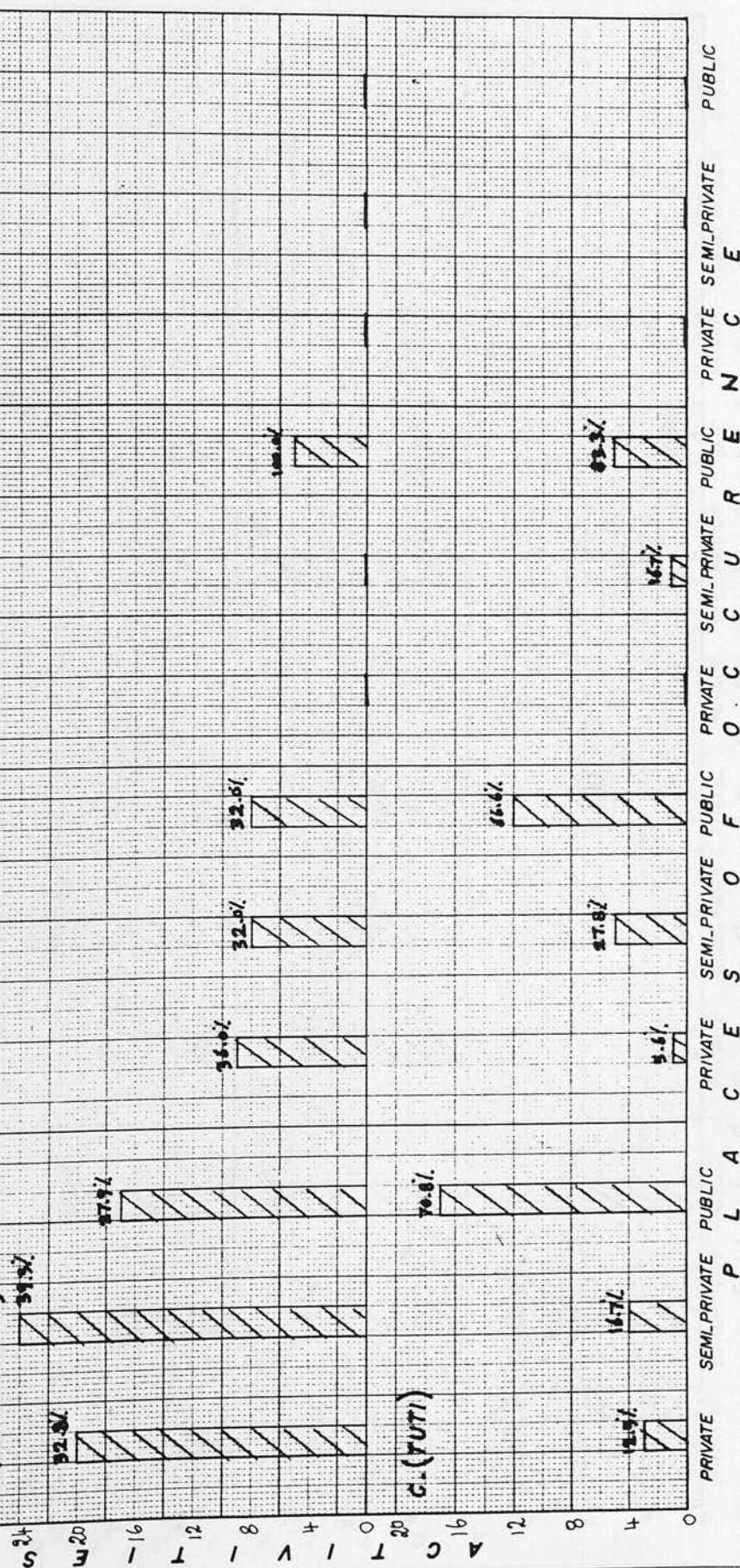
An indigenous neighbourhood, has not been replanned. Its narrow alleys (5 metres) allow children to play freely in the streets. Plot sizes are varying.



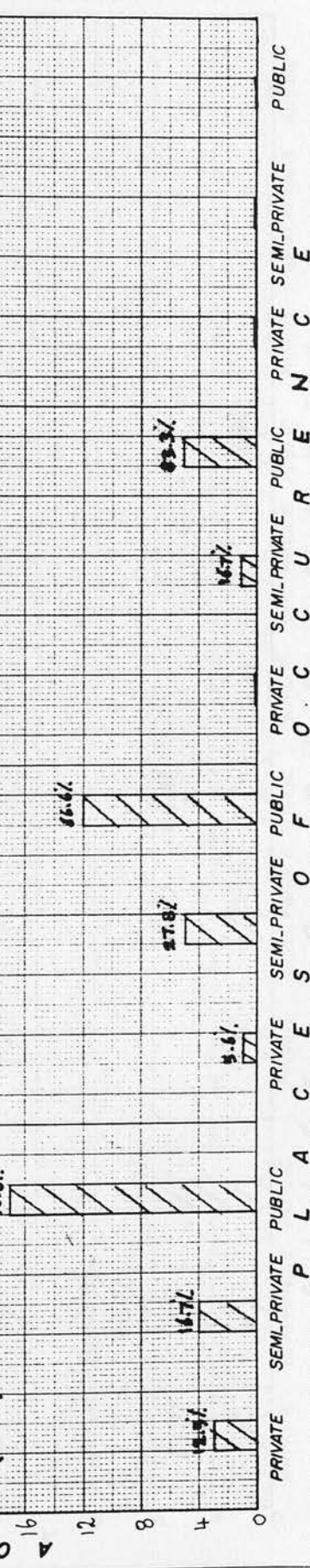
(APP. 28)
A. (EL SIKI HADEED)



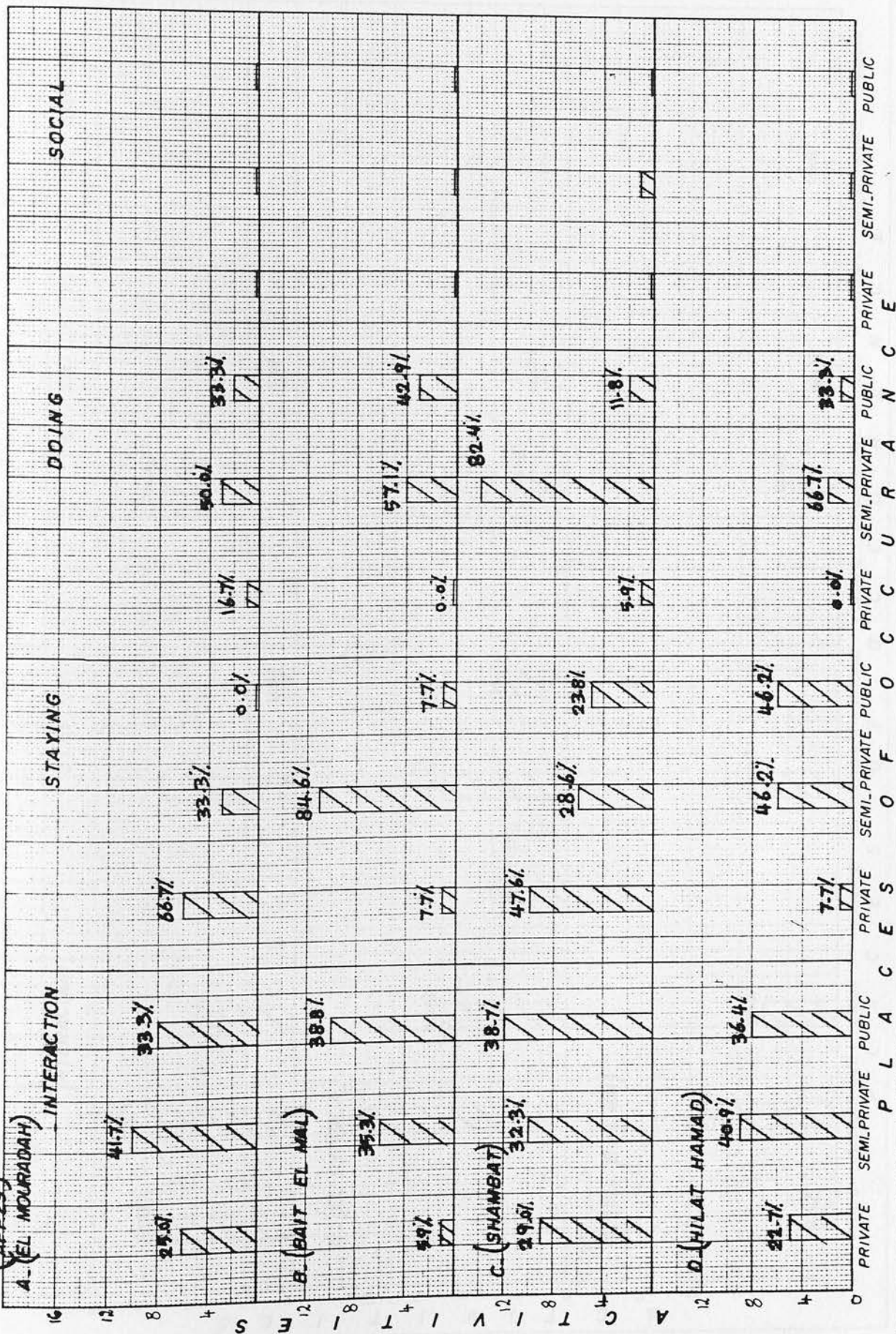
B. (SERIEF WEST)

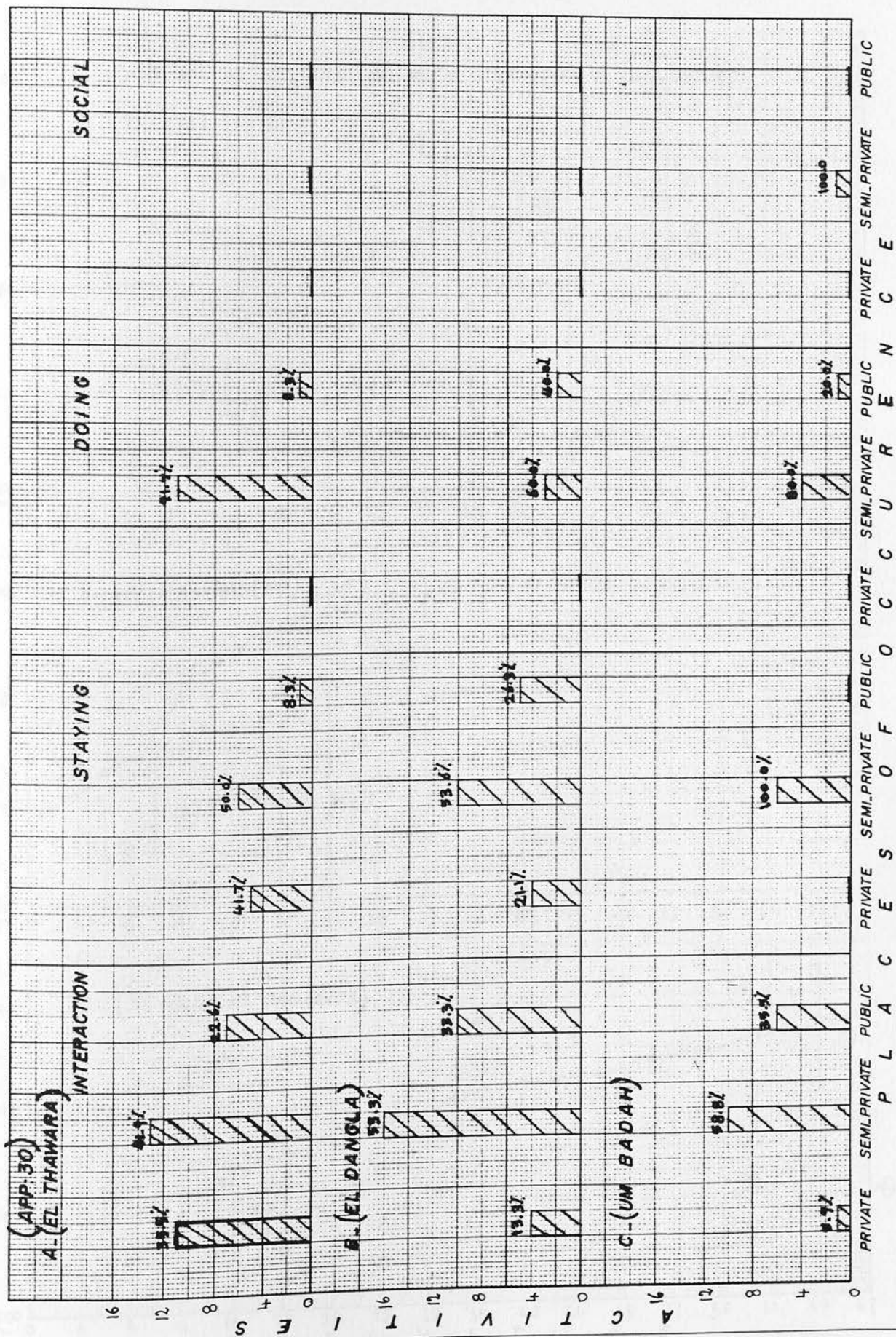


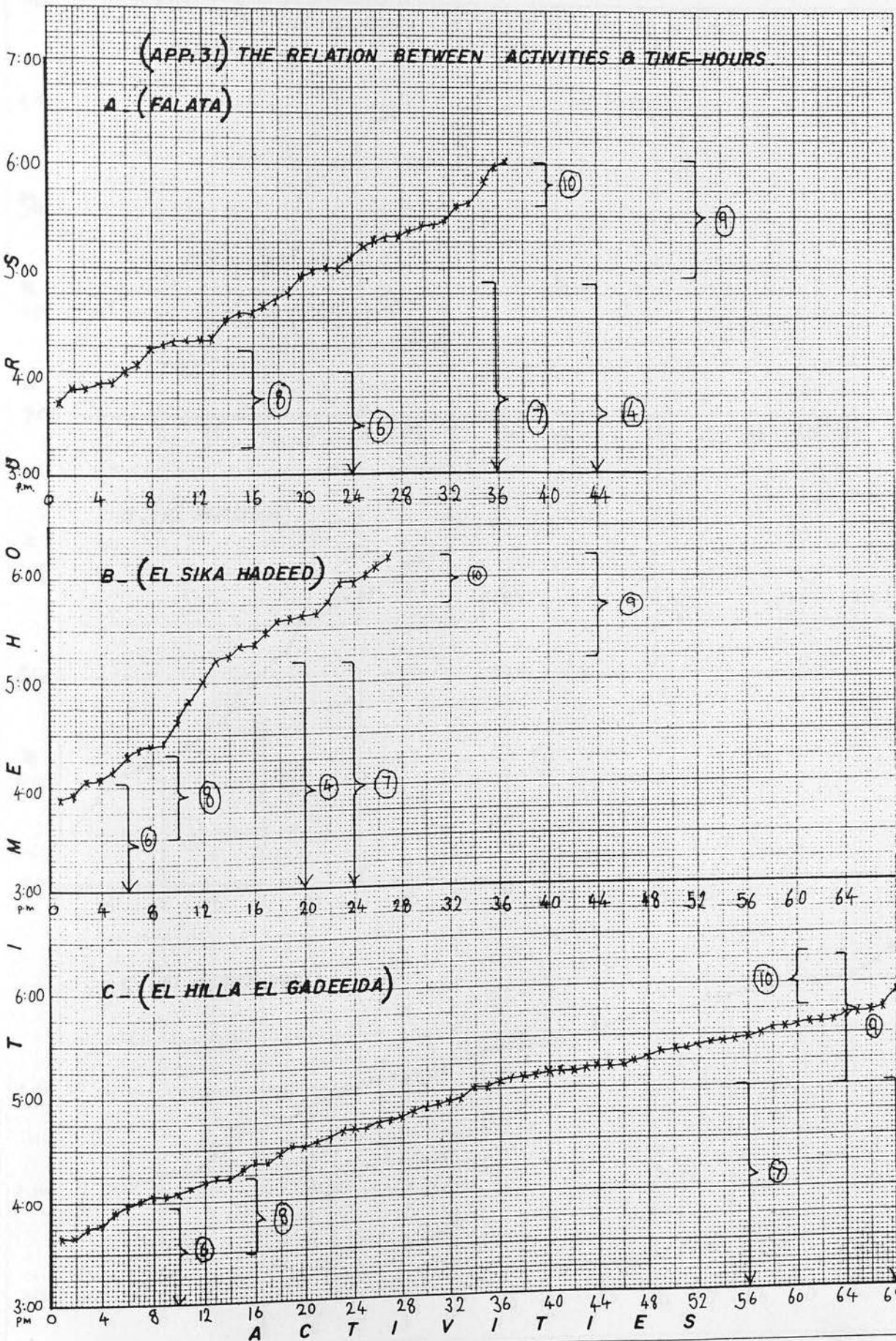
C. (TUTI)

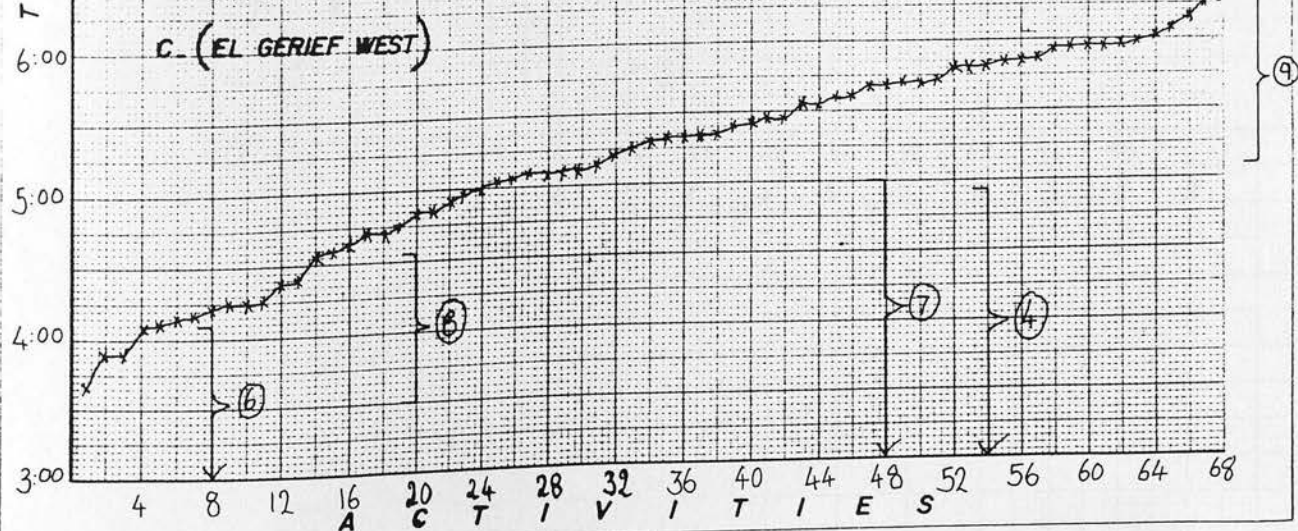
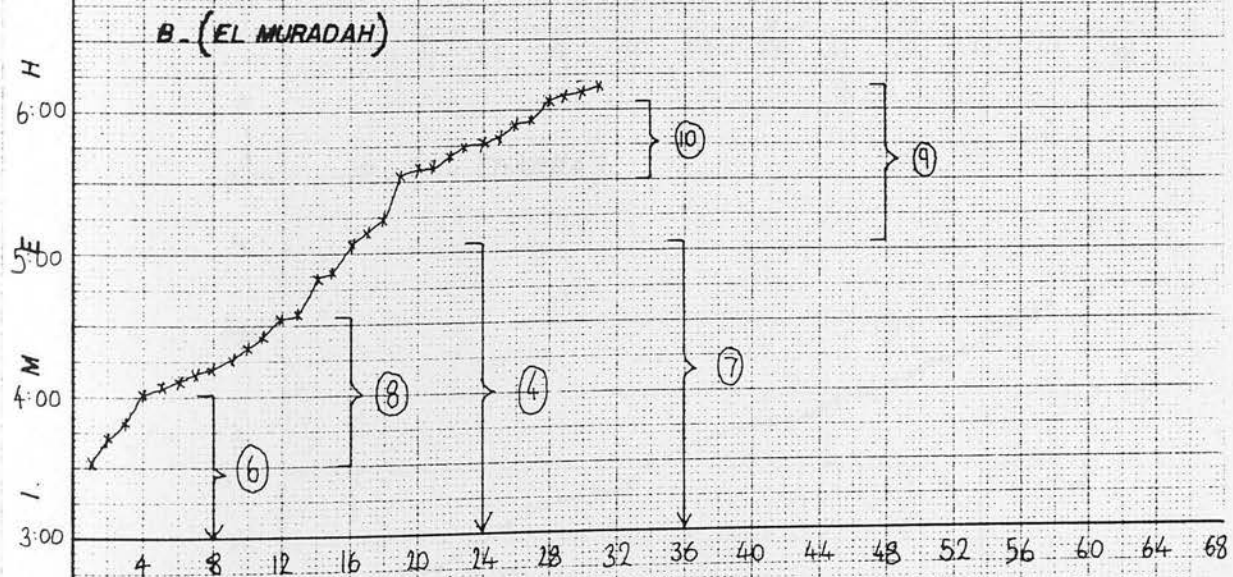
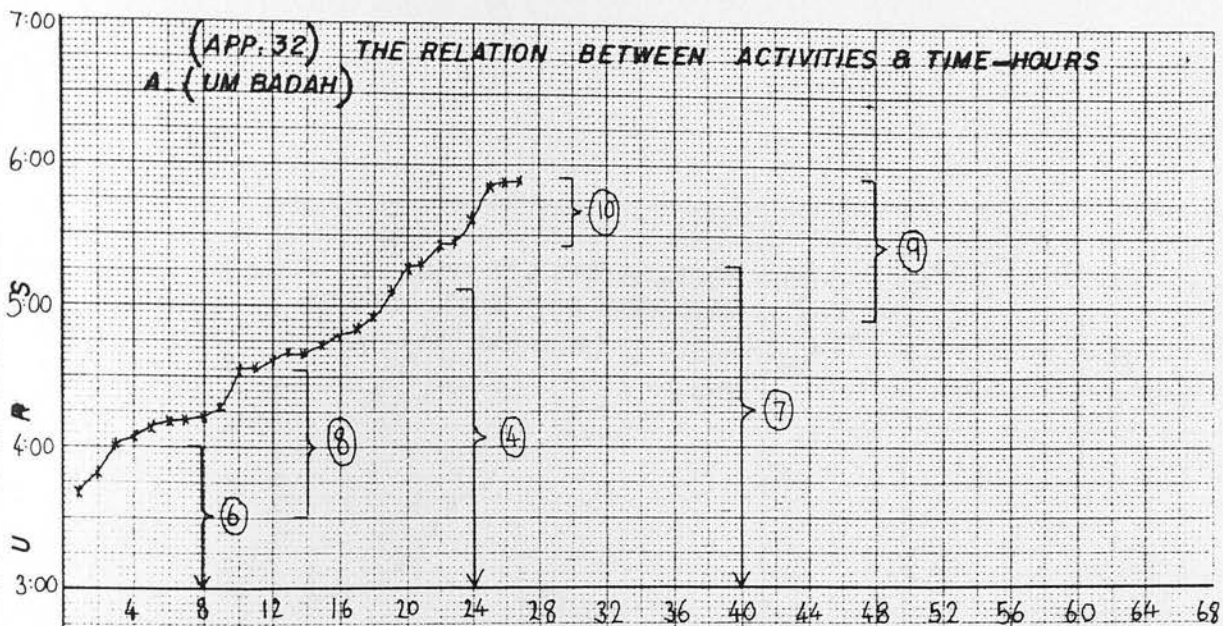


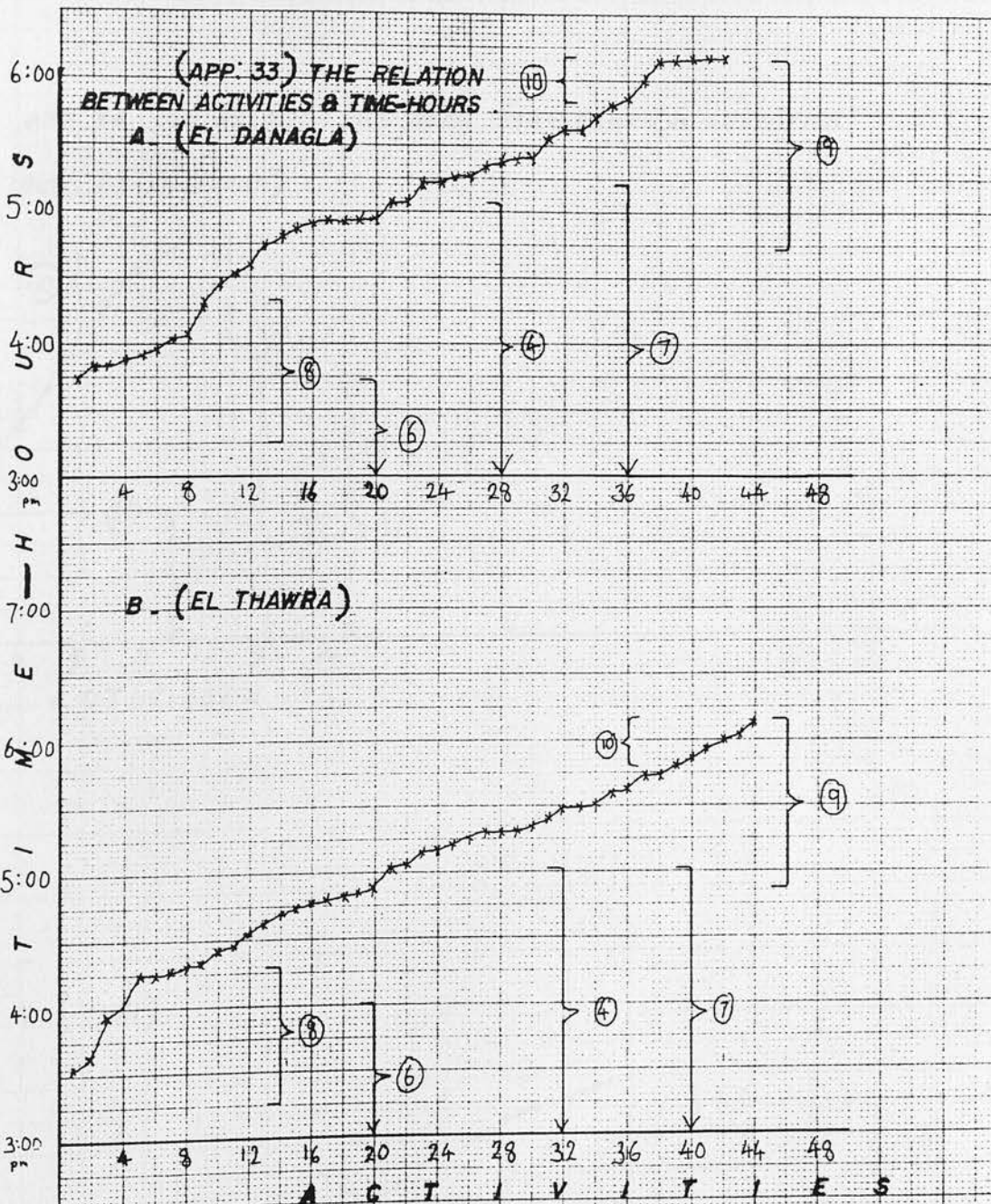
(APP.29)



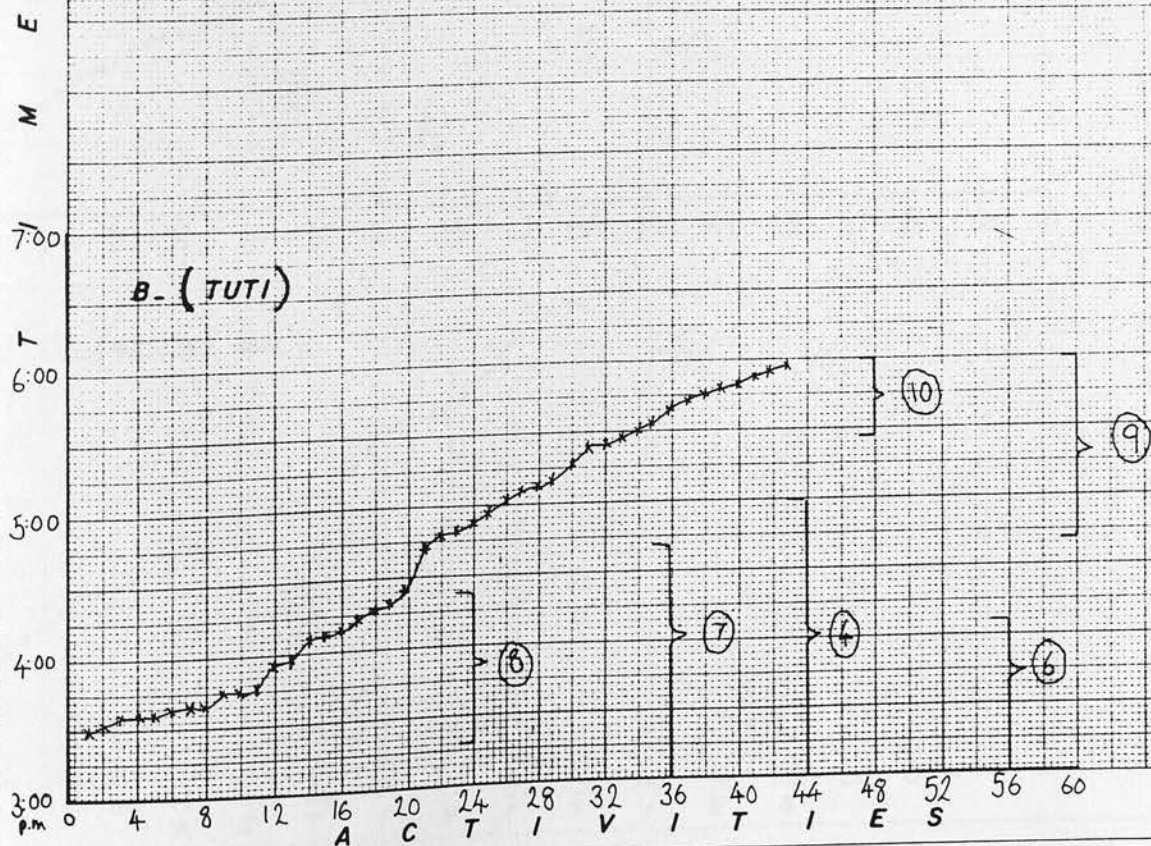
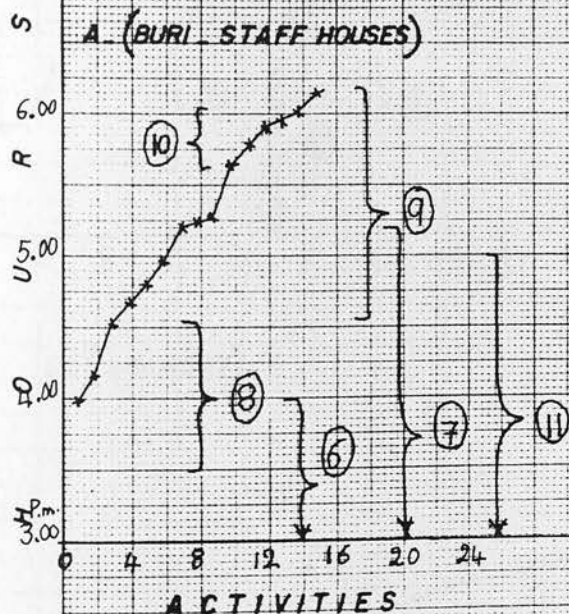


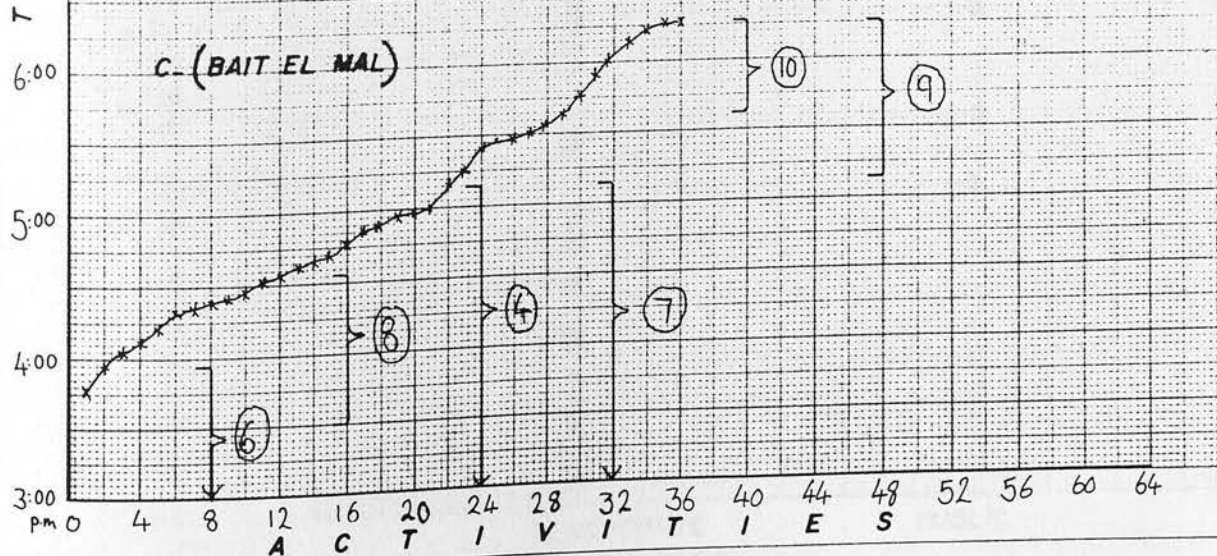
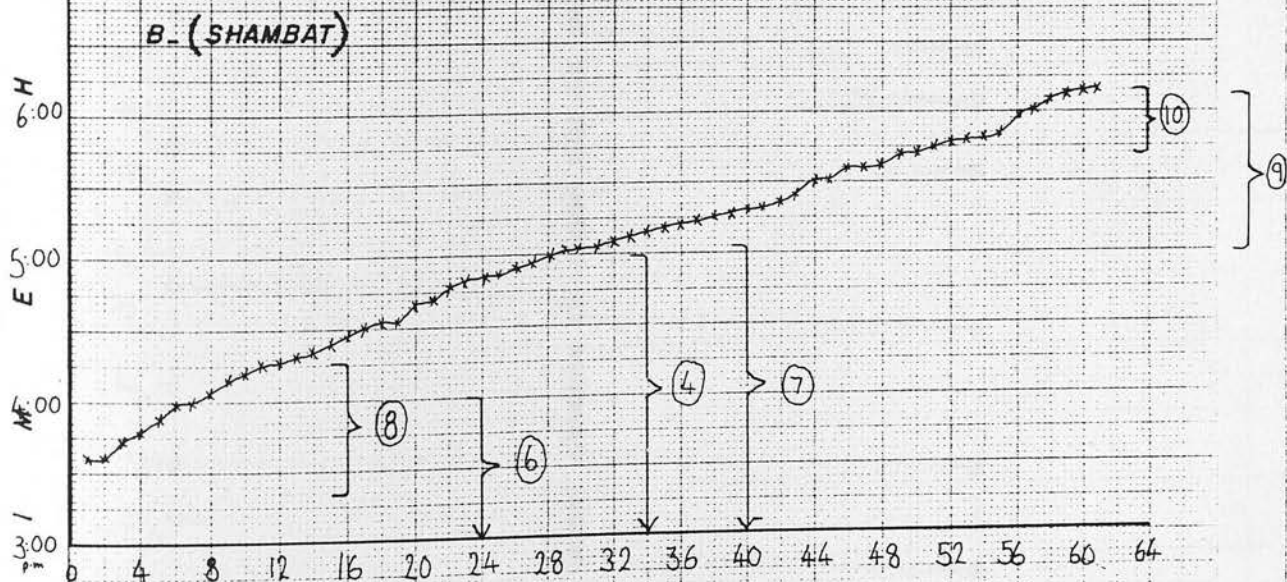
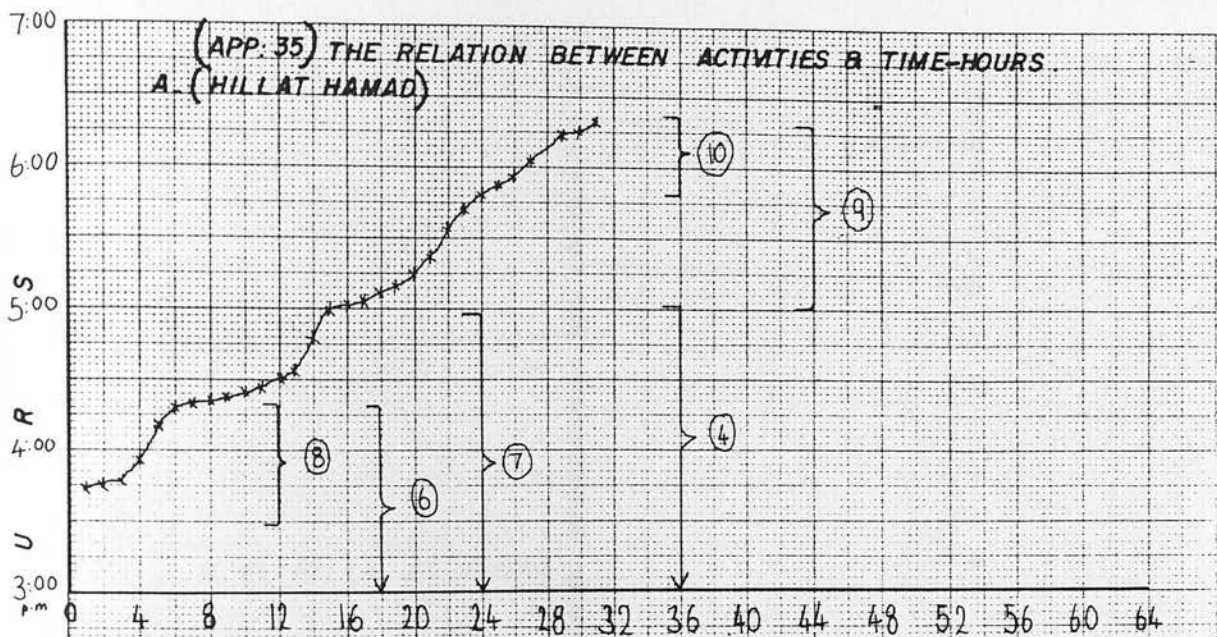


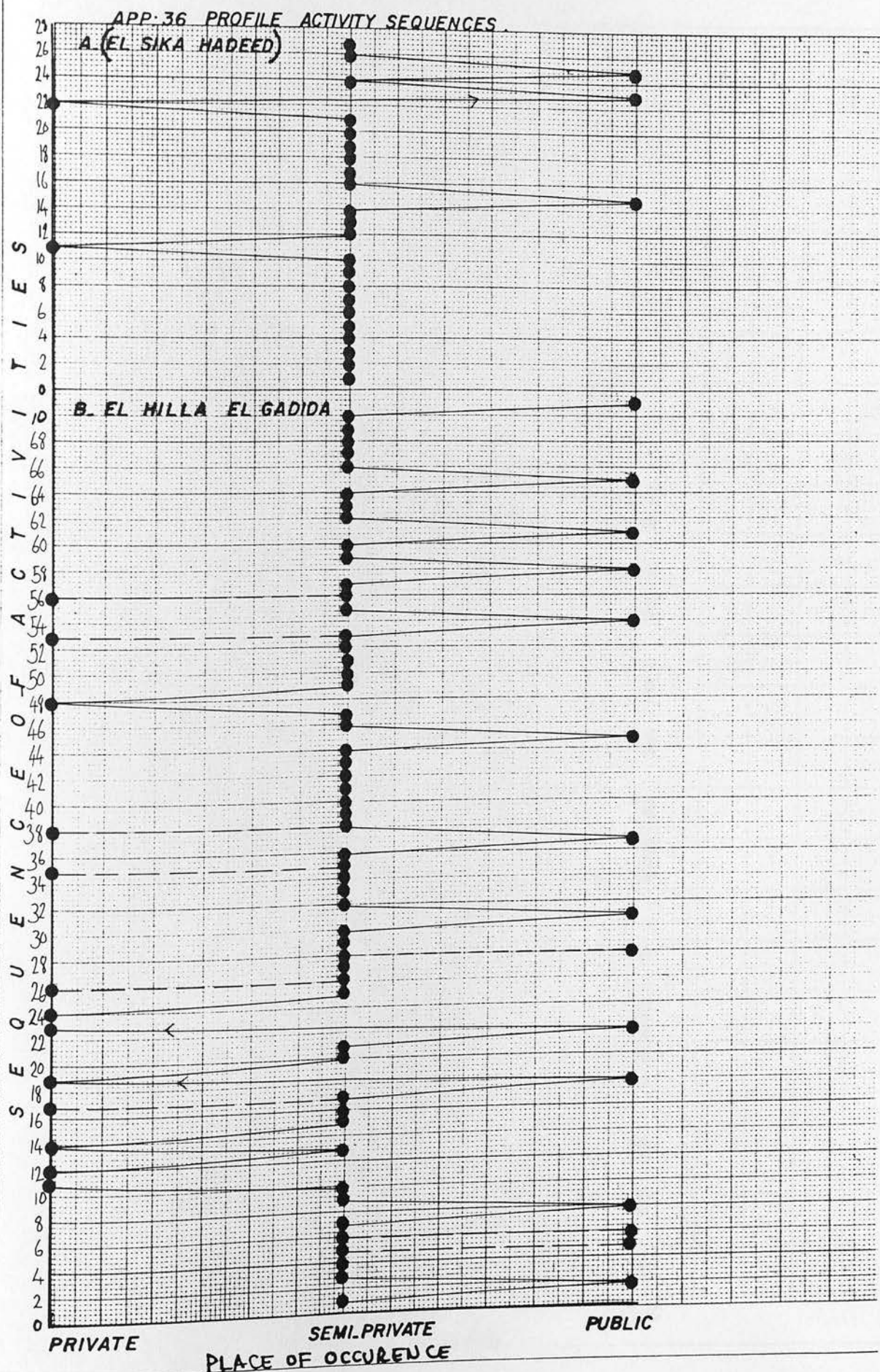




APP. 34 THE RELATION BETWEEN TIME-HOURS & ACTIVITIES







S E Q U E N C E S O F A C T I V I T I E S

APP. 37 PROFILE ACTIVITY SEQUENCES

(EL GERIEF WEST)

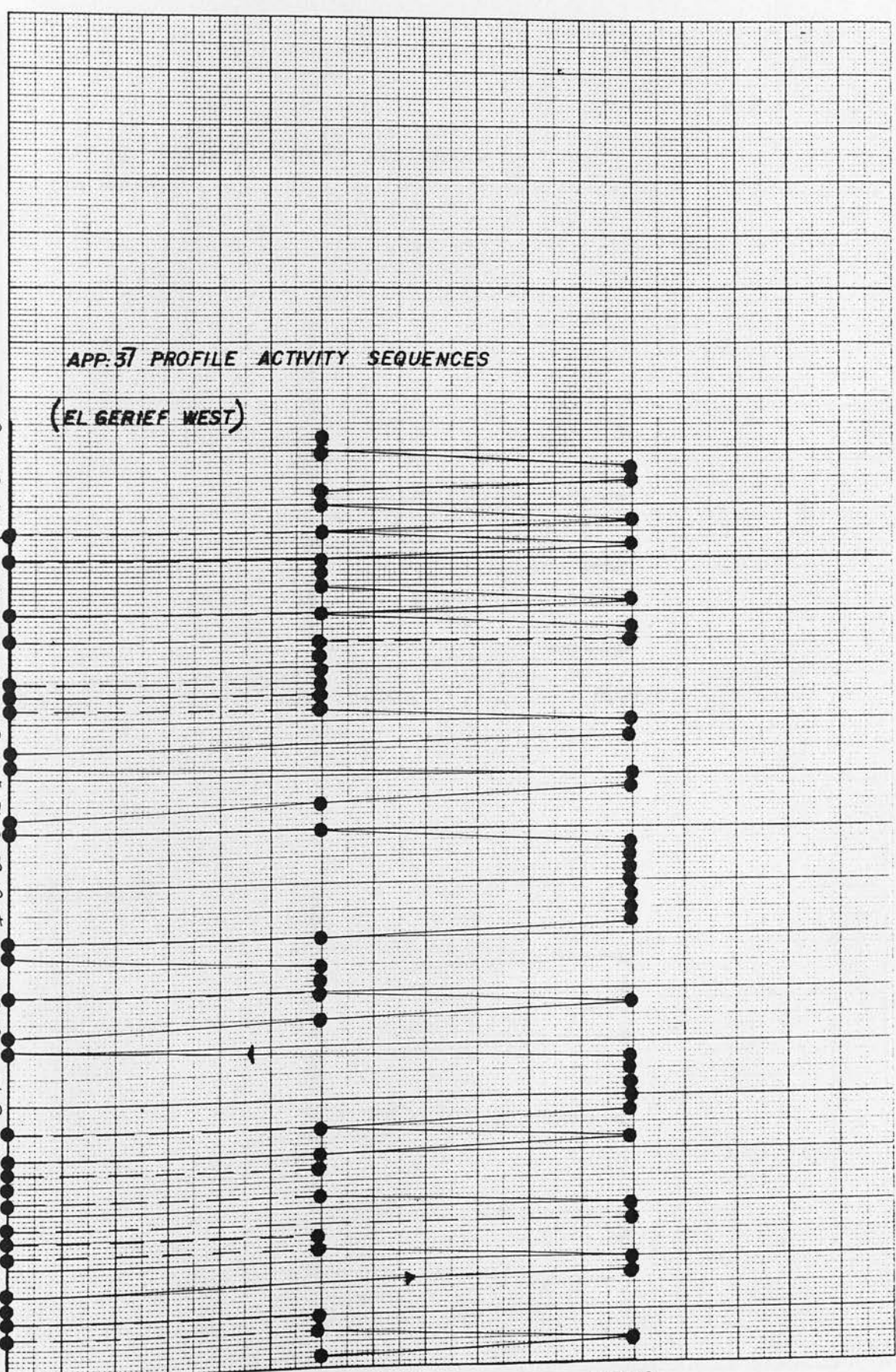
70
68
66
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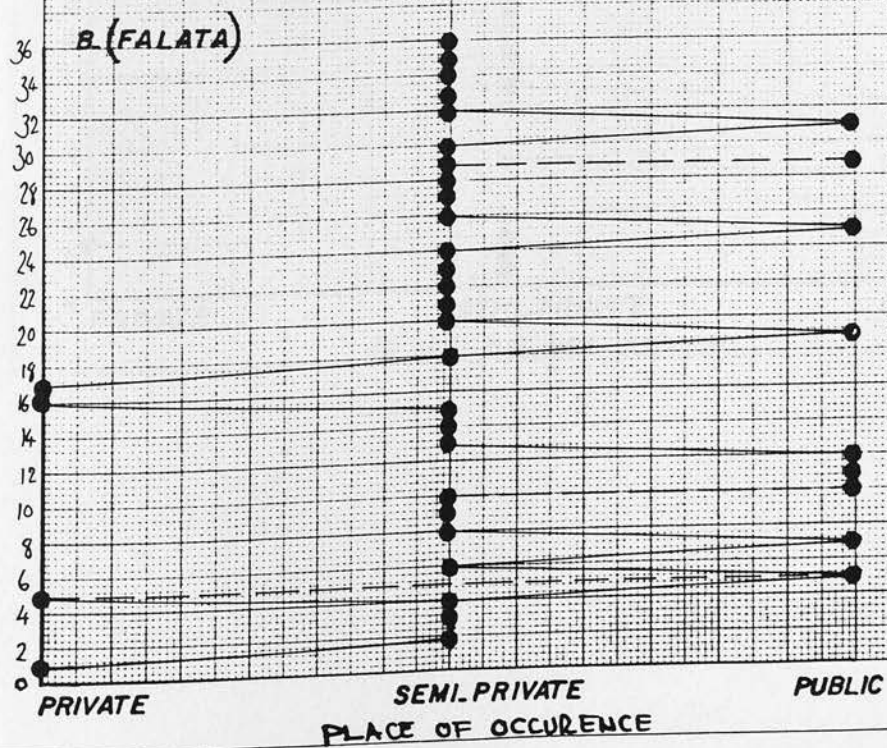
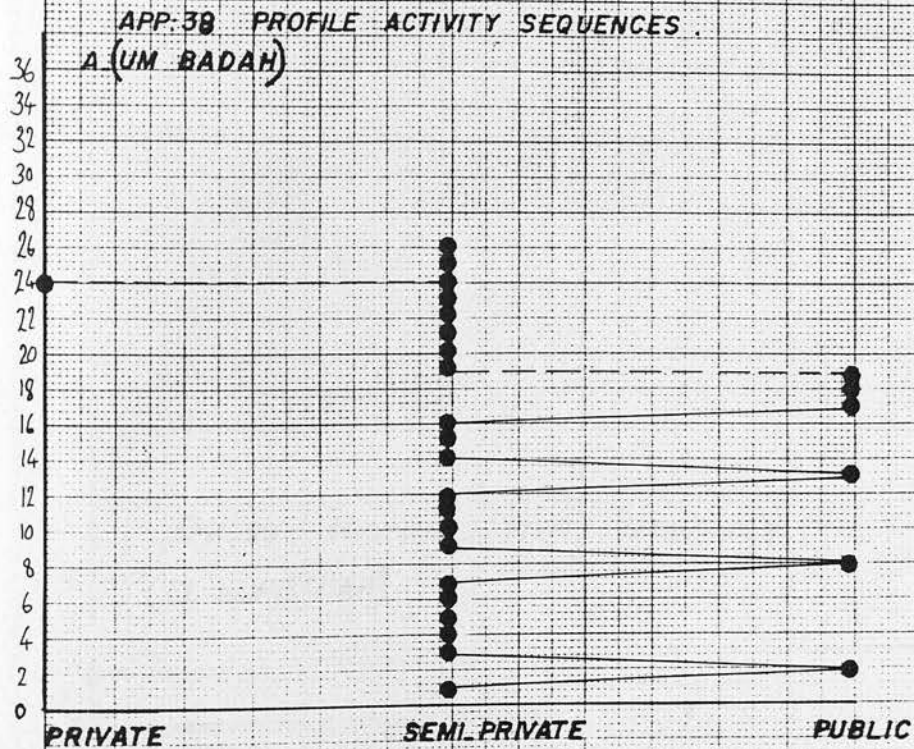
PRIVATE

SEMI-PRIVATE

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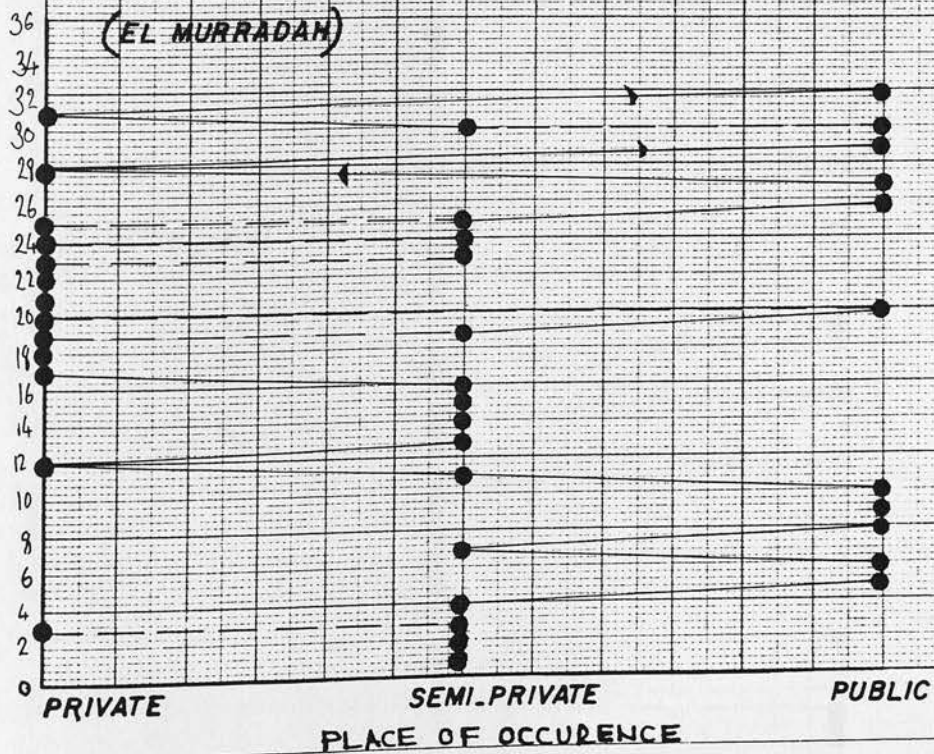
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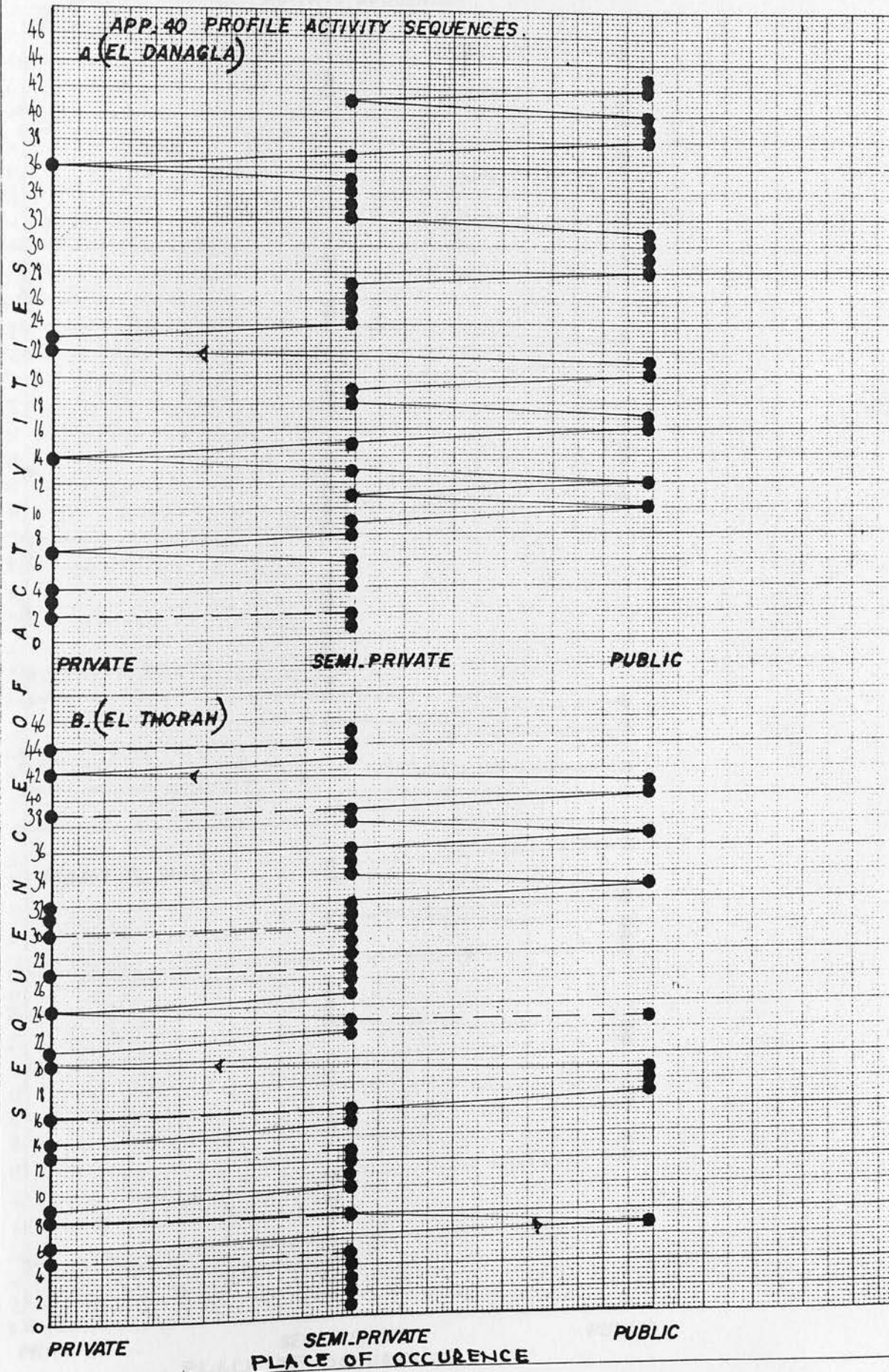




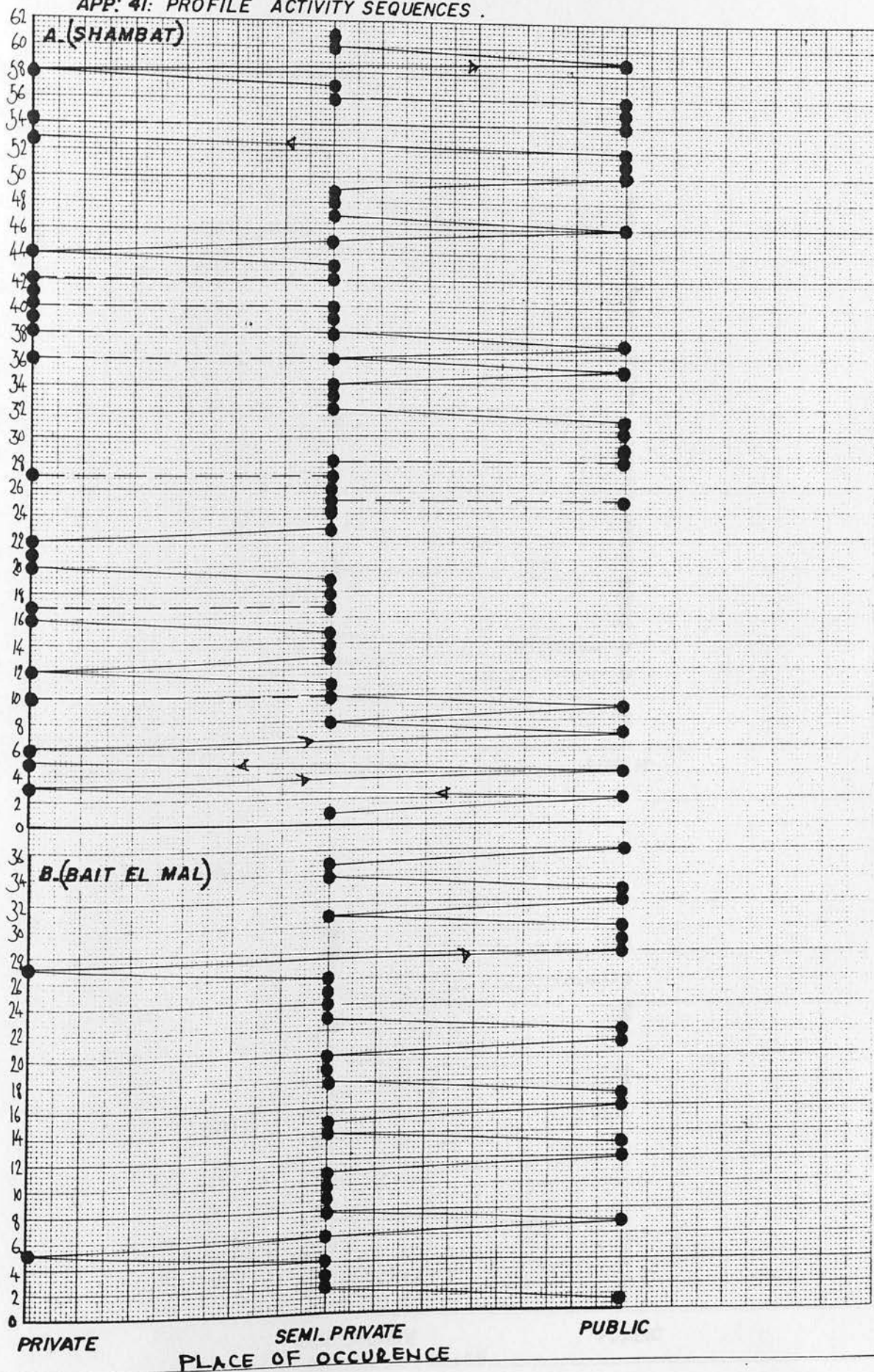
APP. 39 . PROFILE ACTIVITY SEQUENCES

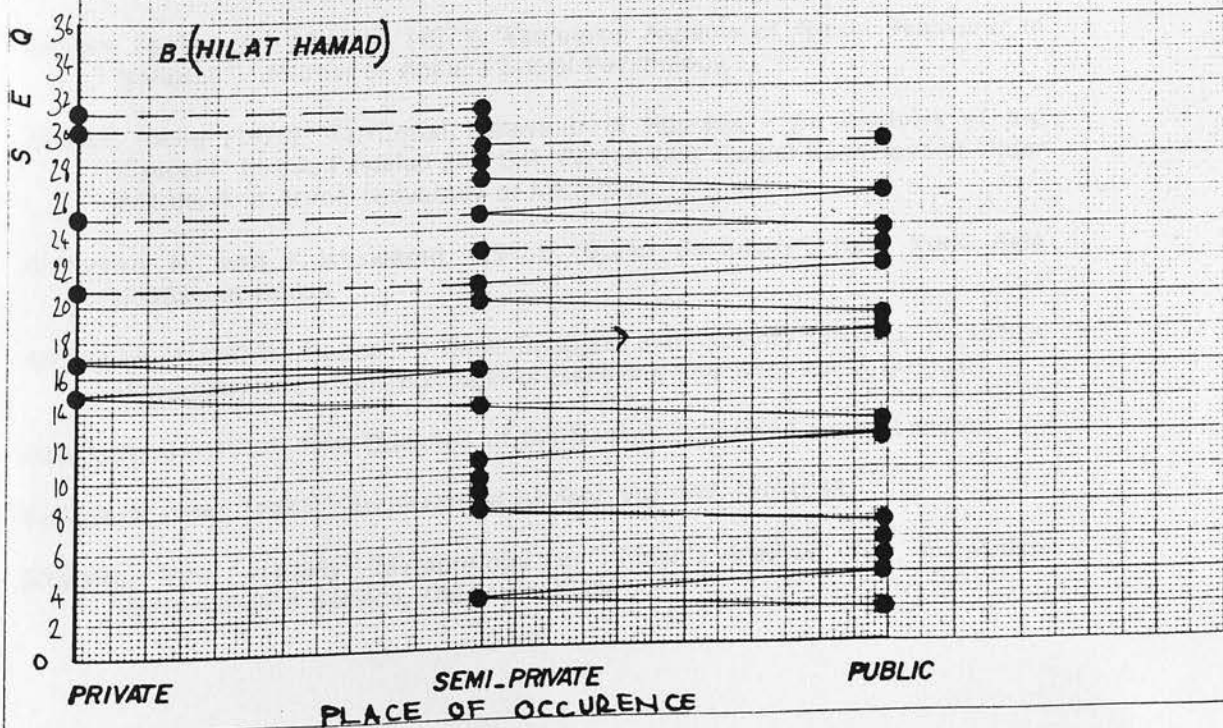
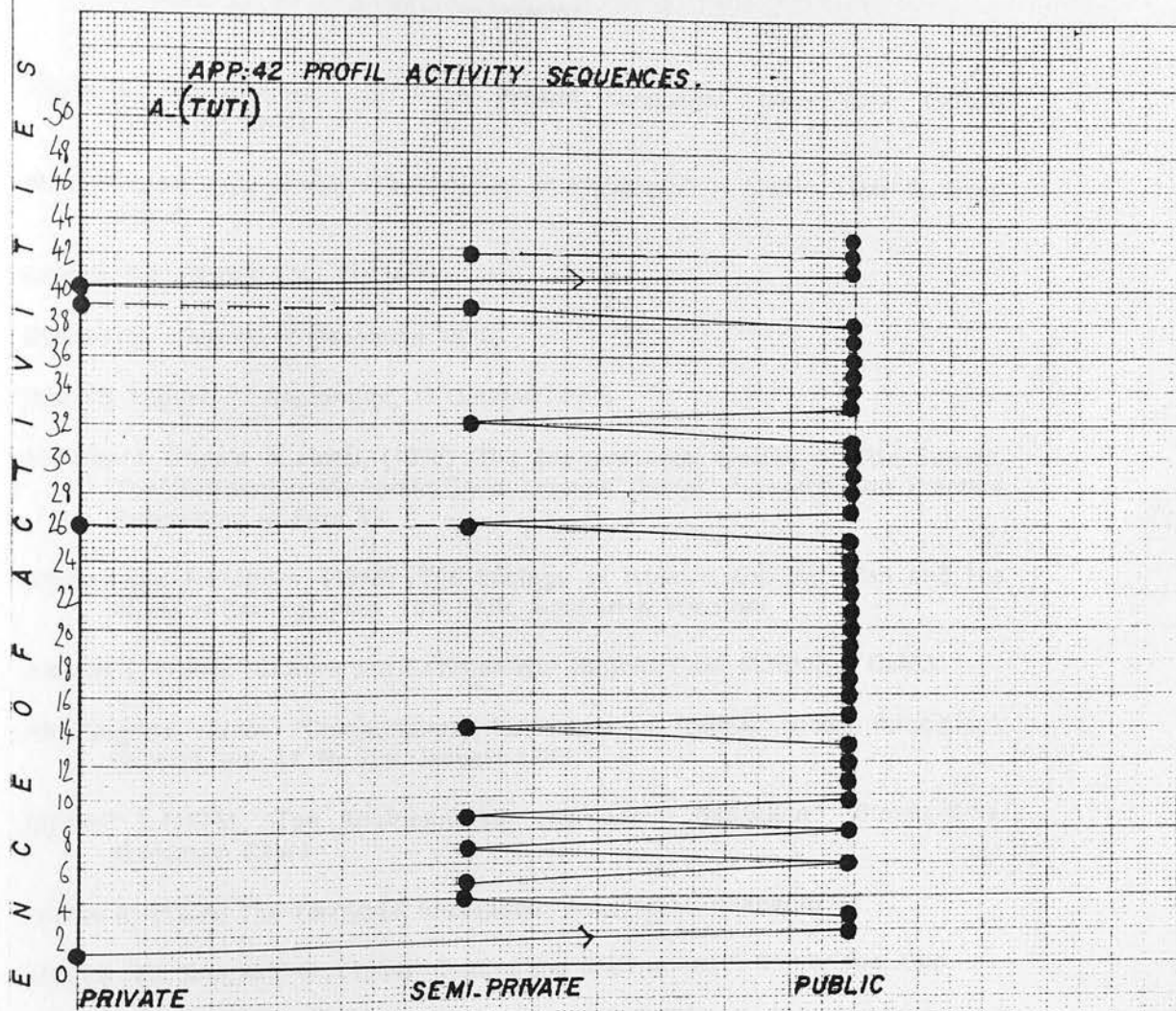
(EL MURRADAH)





APP. 41: PROFILE ACTIVITY SEQUENCES .





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